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THE SRI-WEFA SOVIET ECONOMETRIC MODEL: PHASE ONE DOCUMENTATION

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Stanford Research Institute

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This paper presents the results of Phase I of work on an econometric model of the Soviet Union. The structure of the model is explained and is followed by a discussion of the insights into the operation of the Soviet economy gained through preparation and use of the model. In the two subsequent sections the use of the model is explored, first in the examination of alternative scenarios and the alteration of the model for inferential study, and then the use of the model for forecasting the performance of the Soviet economy. The latter sec-

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tion includes an ex-post forecast for 1973. Model documentation and data sources are presented in the appendices.

This model is a first stage result and many changes are anticipated in the subsequent phases of modeling, which will include an increase in the number of sectors of production to sixteen.

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THE SRI–WEFA SOVIET ECONOMETRIC MODEL: PHASE ONE DOCUMENTATION

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ABSTRACT

This paper presents the results of Phase I of work on an econometric model of the Soviet Union. The structure of the model is explained and is followed by a discussion of the insights into the operation of the Soviet economy gained through preparation and use of the model. In the two subsequent sections the use of the model is explored, first in the examination of alternative scenarios and the alteration of the model for inferential study, and then the use of the model for forecasting the performance of the Soviet economy. The latter section includes an ex-post forecast for 1973. Model documentation and data sources are presented in the appendices.

This model is a first stage result and many changes are anticipated in the subsequent phases of modeling, which will include an increase in the number of sectors of production to sixteen.

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FOREWORD

The coming of age of econometric modeling has produced on the Soviet economic analysts scene, economists trained both in Soviet economic analysis and modern econometric methods. The Strategic Studies Center, as part of its Comparative and Soviet Economics Program, felt the need and timeliness of this first, large-scale effort to construct an econometric model of the Soviet Union. The talents of SRI/SSC's Soviet economists were added to the econometric modeling experience of Wharton Econometric Forecasting Associates, which included some experience with modeling socialist economies, to accomplish this first phase of work on the Soviet econometric model. This paper presents the structure of the econometric model, several applications in simulation and forecasting, and insights gained in model construction and use.

The authors would like to acknowledge Dr. Herbert S. Levine, Senior Research Consultant to the Strategic Studies Center and Professor of Economics at the University of Pennsylvania, Dr. Lawrence R. Klein of Wharton Econometric Forecasting Associates and Professor of Economics at the University of Pennsylvania, Dr. F. Gerard Adams of Wharton EFA and Professor of Economics at the University of Pennsylvania, Dr. Ross S. Preston, Wharton EFA and the Department of Economics, University of Pennsylvania, Dr. Mitsuo Saito, visiting Professor at the University of Pennsylvania and Charles Movit, Research Analyst, SRI/SSC.

The authors would also like to thank the many Soviet specialists and econometrics specialists who participated in the three colloquia on the model held this past year.

Richard B. Foster
Director
Strategic Studies Center

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SECTION ONE: INTRODUCTION

Objectives

The central objective of our research was to develop an econometric model of the Soviet economy, one that would serve as a flexible tool for scenario analysis and for forecasting short- and medium-term. While some attention has been paid to longer run characteristics, our primary concern has not been to build a growth model for the USSR, but rather a macroeconomic model which would assess the impact of plans and other administrative instruments. Concurrently, however, we have been developing a capability for input-output analysis for the sectoral disaggregation anticipated in a second year of research. In forecasting for Western economies, macroeconomic models have been successfully adapted for longterm projections (5-15 years), particularly through integrating an inter-industry framework. It should be emphasized that our objective was not only to build a short and medium term model for forecasting purposes, but also for the analysis of alternative scenarios. The latter objective is of great importance to the policymaker. A model which can simulate the total system responses to specified stimuli, associated with alternative Soviet decision or world situation scenarios, can prove to be of great value to both scholars and policymakers.

Justification for an Econometric Approach

Since the early 1950's, major quantitative research on the Soviet economy has established a significant stock of good data and considerable understanding of Soviet statistics. With the accumulation of a data sample sufficient for standard estimation techniques, it seemed appropriate to bring Western expertise with econometric models together with the measurement experience and descriptive analysis of Soviet specialists. It was hoped that this interaction, appropriately centered at the University of Pennsylvania with its specialists on the Soviet economy and on econometric modelling, would result in an advance in our scholarly understanding of the Soviet economy and through this in policy analysis of Soviet prospects.

With respect to understanding the Soviet system, econometric methodology forces the reduction of theory to tractable specifications, and thus subjects received theory and description to statistical testing Furthermore, as a result of the estimation work we have done on our proposed model, we hope others will be stimulated to undertake studies of socialist economic behavior through the use of econometric model building.

For policy analysis and forecasting, econometric models have proved to be a valuable tool. A well-conceived and well-managed econometric model enhances rather than supplants observer expertise. We elaborate on this point in Section 5 below Here, let us just say that given a macroeconomic model, specialists on individual sectors of the Soviet economy should be able to concentrate on the particulars of those individual sectors with the model handling the evaluation of interaction and full-system effects. Not only does the model provide quantitative measures of the interactions among economic variables in a system context, but it does so with explicit assumptions and statistical properties.

What Has Been Accomplished

We feel that the objectives of our year's research have been accomplished Some, indeed, have been surpassed. For example, in our original proposal we indicated an objective of developing a model composed of 15-20 equations. In actuality, a medium-scale econometric model, consisting of over 100 behavioral equations and identities, has been specified and estimated. The model is related to Soviet plans. While we have not modelled the Soviet system of plan construction, the model is driven by plan budget data and it does contain explicit reference to the economic impact of Soviet annual and five-year plans. The structure of the model is described in Section Two of this report. In order to develop our model, we have collected extensive data on the Soviet economy and built a computer databank of over 650 time series. Our efforts at data collection and construction are discussed in Appendix B.

During the estimation stage, a number of insights have been gained into the operation of the Soviet economy. We have quantified several established hypotheses including the shortrun impact of defense expenditures upon sectoral investment. In addition, new hypotheses such as the role of profits in investment determination have been explored. Through our series of working papers (Appendix C) we have circulated our findings for critical comment. A brief survey of our work in econometric history is presented in Section Three below.

The estimated econometric model has been programmed with WEFA expertise to serve as a flexible tool for scenario analysis and forecasting. Different versions of the model may be selected for particular problems posed by the user. Our initial use of the model for scenarios and forecasting is described in Sections Four and Five. During the present year, we intend to make the SRI-WEFA model a "living model" through continuous exercise and analysis with participation of those who are prospective users of the system for policy analysis.

Finally, we have prepared the input-output framework (using the reconstructed 1959 and 1966 Soviet I-O tables) necessary for disaggregation of the macroeconomic model in the second stage of our project. We have also partially incorporated some input-output structure in the present model for one version of consumption determination. Using the input-output technology and final demand matrices, we have generated synthetic variables for deliveries to personal consumption. These allow us to treat directly the impact of supply influences on Soviet household consumption.

SECTION TWO: THE ECONOMIC STRUCTURE OF THE SRI-WEFA MODEL

In this section of the report, the essential structure of the econometric model will be presented in a descriptive and non-technical way. A more complete analysis of its specification and use is included as Appendix A to this report. We begin with a discussion of the dimensions of the model and a description of the exogenous environment. Then we discuss the key behavioral relationships of the model, and conclude by briefly indicating the procedural steps in solution and the major feedback flows within a given period.

Dimensions of the Model

Before discussing the structure of the SRI-WEFA Model, it is important that the degree of disaggregation in this macroeconomic system be understood. A complete picture of the disaggregation may be gained from the list of Model variables provided in Appendix A; in this section of the report we will discuss only the levels of disaggregation on the sides of supply (production and factor inputs) and demand (components of GNP end-use).

On the supply side, GNP is composed of the output of five productive sectors:

(1) Industry (I)

(2) Agriculture (A)

(3) Construction (C)

(4) Transport and Communications (T)

(5) Government, Services and Trade (G)

The letter symbol for each sector is used in identifying the components of output (X), capital (K) and employment (N) when the sector letter appears second in a variable name. The fifth production category (G) corresponds roughly to the non-material sphere of the national economy in Marxian terms.

Capital assets are disaggregated into these same five categories, but there is a further disaggregation for the agricultural and government sectors. In agriculture, we distinguish between physical capital (which includes draft animals) and productive livestock (cows, sheep, pigs, etc.). In the government sector, we disaggregate capital stock into housing and nonhousing categories because of different patterns of investment and capital formation. The same five categories are used for disaggregating employment but in the agricultural sector we distinguish between employment in the socialized sector (state and collective farms) and in the private sector. Furthermore, we are also concerned with the stocks of specialist manpower (EMT) employed in industry and in transport and communications. Thus, we have five production categories, seven capital categories, and eight employment categories in the Model.

On the demand side, GNP by end-use is disaggregated as indicated in Table 1 below. There are four categories of consumption, three categories of investment, four categories of government spending (as usually defined in the West), net exports and an end-use residual category. Note that Science as an end-use category within government has not been divided into civilian research and development on the one hand and military and space science on the other, as is frequently done in Western evaluations of Soviet GNP. New fixed investment is, however, broken down further into the six categories of physical capital. The net exports category of GNP end-use is composed of 5 export and 7 import categories which are also presented in Table 1.

This level of disaggregation in the Model was regarded as workable and attainable during the initial stage of our research. It provides sufficient detail for macroeconomic scenarios and forecasting, and at the same time is not so complex as to preclude non-technical discussions and direct user participation.

In the second stage of the project, we anticipate substantial disaggregation of the supply side of the Model and also further disaggregation in the foreign trade component of end-use.

TABLE 1

END-USE CATEGORIES IN THE MODEL

1. Consumption	(a) Food
	(b) Soft Goods
	(c) Durable Goods
	(d) Personal Services
2. Investment	(a) New Fixed Capital Investment
	1) Agriculture
	2) Industry
	3) Construction
	4) Transport and Communications
	5) Housing
	6) Services and Trade
	(b) Capital Repair
	(c) Inventories
3. Government	(a) Administration
	(b) Health and Education
	(c) Science
	(d) Defense
4. Net Exports	(a) Exports to CMEA
	1) Food
	2) Other
	(b) Exports to other Centrally-Planned Economies (CPE's)
	(c) Exports to Developed West
	(d) Exports to Less Developed Countries (LDC's)
	(e) Imports from CMEA
	(f) Imports from other CPE's
	(g) Imports from Developed West
	1) Wheat and Wheat Flour
	2) Machinery and Manufacturing
	3) Other
	(h) Imports from LDC's
	1) Food
	2) Other

5. End-Use Residual (Grain Reserves, Livestock Accumulation, Statistical Discrepancy)

Exogenous Variables

The exogenous environment of the model may be partitioned into three groups of variables: (1) pure exogenous variables, (2) predetermined variables, and (3) annual policy variables. The category of pure exogenous variables includes those which cannot be influenced significantly by Soviet economic policy, past or present. Of major importance in this category are weather variables, temperature and precipitation, which affect the harvest. Another important set of pure exogenous variables are developments in foreign economies: indexes of world trade, world market prices, and activity levels in CMEA economies. Essentially, we assume that Soviet trade policy and political influence have a negligible impact upon such developments so that we may disregard all such feedback in the formal specification. At present, this is probably a reasonable assumption; if Soviet trade becomes more significant in world trade activity, these interrelationships can be best handled within the framework of the LINK system.

Predetermined variables include the inherited stocks of productive factors: population, fixed capital, land, livestock, and inventories. Within the present model, changes in population and demographic structure are regarded as purely exogenous. However, the location of population (urban/rural) and the participation in the labor force are influenced by economic variables. Another important group of predetermined variables are the past agricultural harvests which influence current allocational decisions by Gosplan, state and collective farms, and peasant households. A third group of variables which could be included in the predetermined category are those timing variables imposed by the modeller (usually in the form of dummy variables)to capture the timing of investment projects (the five-year plan cycle) and the timing of major organizational and price reforms (e.g., the 1967-68 industrial price reform).

The policy variables which play crucial roles in the model are those decision variables represented in the Annual Plan and its derivative Annual Budget. Although there are innumerable discretionary variables available to Soviet policymakers, the model focuses upon a small number of aggregate policy variables which directly enter into the behavioral equations. One such policy variable is defense expenditure which is treated as strictly exogenous. A second group of policy variables includes the financing of economic sectors: industry and construction, agriculture, transport and communications, social and cultural measures, and housing. While financing is exogenous, investment is endogenous, influenced by sectoral financing, defense expenditure, and gross profits. A third group of policy variables are transfer expenditure and tax rates which influence the size and composition of the state budget.

The Core of the Model

It is within such an exogenous environment that the modelled economy is presumed to operate. Given values for all exogenous variables, the system of behavioral relationships which we have estimated statistically will determine a solution to the model. A solution consists of estimated values for each endogenous (explained) variable included in the model. In this report, we will not examine each behavioral relation in the system in detail; rather, we will describe what might be called the core of the model, i.e., its economic structure and the causal links among key components. In a supplement to be issued later than this report, we will discuss each behavioral relation in the model.

The core of the SRI-WEFA model consists of seven major components:

(1) Factor Supply Equations
(2) Sectoral Production Functions
(3) Capital Investment Functions
(4) Income, Wage and Price Equations
(5) Consumption Functions
(6) Foreign Trade Equations
(7) Residual Analysis

The links between these components are diagrammed below in Figure 1 and we shall describe briefly the contents of each component. Appendix A to this report contains a more technical description of the model with a complete list of equations, sectors, and variables. An index of model equations corresponding to the following description of the core is included below in Table 2.

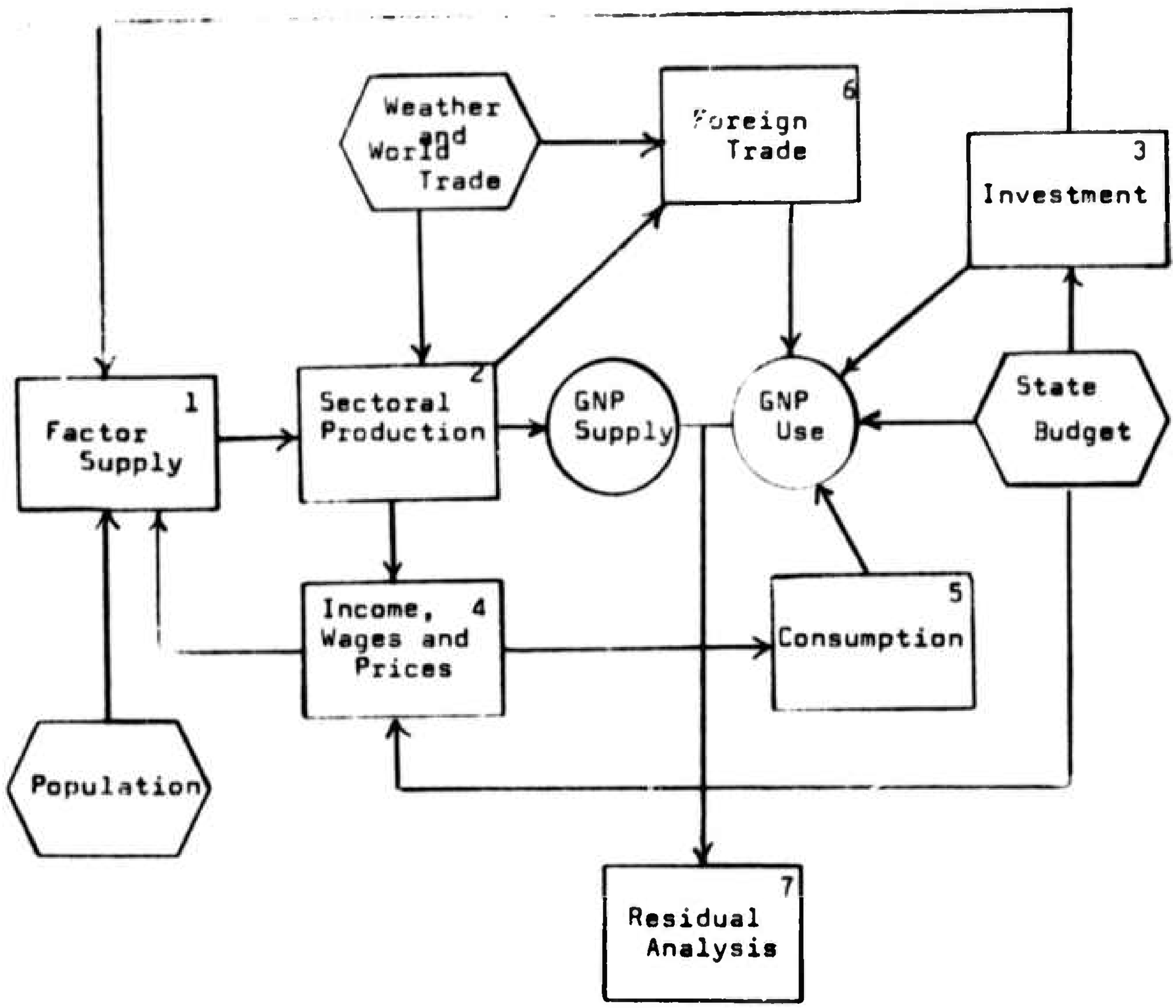
(1) Factor Supply Equations

In the model, mean annual population and sown acreage are exogenous and start-of-year capital stocks, inventories, and livestock herds are predetermined. The distribution of population between urban and rural categories and labor participation rates are endogenous, dependent upon wage differentials, relative housing scarcities, and past harvests. The allocations of total nonagricultural employment to industry, construction, transport and communications, and the government sectors is influenced by the five-year-plan cycle (whether the given year is toward the start or the end of the current 5YP) and the previous year's allocations of investment.

Current year additions to January 1 capital stocks are predicted by sectoral capital formation equations which phase current and past investment expenditures in capital increments. The timing of that phasing is influenced from the five-year plan. Similarly, additions to specialist employees in industry and transport are determined by appropriate past enrollments in higher technical education. Inputs of current purchases to agriculture are significantly influenced by recent harvests. Growth in the herd of livestock depends upon provision for young livestock and recent harvests.

FIGURE 1

The Core of the SRI-WEFA Model



Endogenous components represented by rectangles.

Exogenous variables and partially exogenous components represented by hexagons.

(2) Sectoral Production Functions

For each of five sectors we have estimated a production function, relating output to the levels of inputs. Except for construction, all output time-series are Western reconstructions of Soviet data (see Appendix B for a justification of this choice). In two sectors, industry and transport/communications, the labor force is disaggregated into specialist and non-specialist employees. Where high correlation between output and input series precluded direct estimation of factor contributions to output, observed factor shares in established prices were used to determine the relative factor contributions; this step was necessary only for the industrial and government sectors. For agriculture, after considerable experimentation, we adopted a two-step estimation procedure: (a) to estimate a production function for "potential output" obtained by connecting agricultural peaks with line segments, (b) to relate deviations from "potential output" to weather conditions and measures of factor input intensities.

(3) Investment Functions

Given last year's investment allocations, investment in the current year is a function of budget financing in the Annual Plan, the level of gross profits, budget outlays on defense expenditure, and the current and preceding harvests. Positive impact of financing plans upon sectoral investment is found in industry, transport, communications, and housing. Economy-wide gross profits affect industrial investment through decentralized enterprise demand or centralized response to generally favorable economic conditions. Defense expenditure tends to crowd out investment in industry, housing and the services/trade sector, at least in the short-run. The current harvest has a positive impact upon agricultural investment (decentralized activity by state and collective farms) and upon industrial investment (through the level of gross profits). In a "crisis response" fashion, harvest failures in the previous year boost the current level of agricultural investment.

(4) Income, Wage and Price Equations

Money income of households is largely determined by employment and money wage rates, with adjustment for transfer payments and direct taxes set by the Budget. Changes in the category of gross profits are influenced by price reforms and harvest conditions. In our model, the longrun industrial real wage is determined by average productivity in industry with only partial adjustment in most years but large adjustments in years of major wage reform (the timing for which is exogenous). A similar relationship links the longrun agricultural real wage to average productivity in agriculture, while other sectoral wage rates essentially move in tandem with the industrial wage. Non-food prices are essentially marked-up on the industrial money wage but where past prices influence the current money wage (the real wage being determined by average productivity). Food prices reflect shortrun scarcities via a "negotiated" food price; harvest failures thus have inflationary consequences for the economy, at least in the short run.

(5) Consumption Functions

When key supply constraints are taken into account, there do appear to be stable relationships between consumption expenditures and disposable income, both measured in real terms. Consumption is broken down into four categories: food, nondurables, durable goods, and services (including health and education).

Food and nondurable consumption are constrained by agricultural production as well as being influenced by the relative price of food. Expenditures on durable goods and services are constrained by relevant sectoral productions. As discussed in Section Four, there are alternative ways in which consumption may be determined with greater influence from supply: either completely when consumption is the residual category of end-use, or through delivery variables obtained from the 1966 input-output table.

(6) Foreign Trade

The USSR's exports and imports are determined primarily by levels of domestic and foreign production with limited influence from prices and rather more from harvest failures. Four trading regions are identified: CMEA (the six East European economies), other Centrally-planned Economies or CPE's (Cuba, China, North Korea, etc.), the Developed West, and Less Developed Countries (LDC's). On the commodity dimensions, food exports to CMEA, wheat and wheat flour imports from the Developed West, machines-manufactures imports from the Developed West, and food imports from LDC's are separately treated. USSR trade flows are measured in dollars and then converted and deflated to constant domestic rubles as an end-use category for residual analysis.

(7) Residual Analysis

In this component of the core, other end-use categories including capital repair, inventory investment, science and administration are estimated. National Product by sector-of-origin is computed using sectoral outputs and 1970 sectoral weights in established prices. We also have an estimated equation for an end-use residual category which conceptually includes state grain reserves, other undisclosed items, dollar-ruble conversion errors and statistical discrepancy.

In the context of the model solution, when consumption is obtained directly there will also be a simulation residual equal to the difference between sector-of-origin GNP and end-use GNP. Alternatively, when consumption is obtained as the residual end-use category, there is no simulation residual; all end-use categories including the modelled end-use residual are computed and subtracted from sector-of-origin GNP to determine aggregate consumption.

TABLE 2

Index of Equations and the Model Core

The list of equations is provided in Appendix A. This index relates the discussions of the Model core in Section Two to particular equation numbers in that list.

	Component	Equations	
(1)	Factor Supply	A.1 - A.2	Other Inputs
		K.1 - K.14	Capital Formation
		N.1 - N.12	Population and Employment
(2)	Production Functions	X.1 - X.6	Production
(3)	Investment	I.1 - I.9	Investment
(4)	Income, Wages and Prices	P.1 - P.13	Prices
		W.1 - W.5	Wages
		Z.1 - Z.7	Incomes
(5)	Consumption	C.1 - C.5	Consumption
(6)	Foreign Trade	E.1 - E.7	Exports
		M.1 - M.9	Imports
(7)	Residual Analysis	I.10--I.13	Inventories
		G.1 - G.6	Aggregate Identities and Balances

A Solution of the Model

With the foregoing descriptions of the exogenous environment and the endogenous relationships, we may now step through the solution procedure of the model for any gi , year. Reflecting Western analysis of the Soviet economy, the SRI-WEFA Model is essentially supply-oriented rather than demand-oriented, in contrast to models built for analysis of Western economies. Figure 1 above should be helpful in following this discussion of the solution procedure. Let us take the year 1972 as our example. To solve the model for 1972 we need 1972 values for each exogenous variable and 1971 (and earlier for some variables) values for endogenous variables whose past values influence current behavior. These 1971 values for endogenous variables might be the actual observed values in a one-period simulation or the solution values of the model for 1971 in a dynamic simulation.

Though our model is not recursive, we leave aside system feedbacks for the moment so that we can describe the solution process in a step-by-step manner. The major feedback loops will then be described afterwards. We begin with the exogenous data from the annual plan on sectoral financing and defense expenditure. These variables largely determine investment expenditure. Current investment, together with inherited capital stocks, determines the supply of capital for the current period. Labor supplies for all sectors are essentially determined by predetermined variables including past labor allocation, income differentials, relative housing stocks, and past investment. Consequently, sectoral outputs and GNP by sector-of-origin are then computed given factor supplies and the exogenous weather variables.

Incomes, wage rates and prices adjust during the current year in accord with production and employment. Household incomes, adjusted by personal taxes and transfer payments in the State budget, and relative prices then determine consumption demand (which is also constrained by production in certain categories). Foreign trade flows are influenced by domestic production levels as well as world market conditions. The endogenous components of the State budget are also computed taking the current harvest into account. Inventories adjust in response to current consumption, the agricultural harvest, nonagricultural GNP and defense expenditure. The addition of all end-use categories provides us with end-use GNP which is subtracted from sector-of-origin GNP to give us the simulation residual for 1972.

The foregoing discussion and Figure 1 have been simplified to achieve clarity of presentation by abstracting from feedback loops which make the solution of the model a simultaneous equation problem (one which usually requires 8-12 computer iterations for each year's solution). The major feedback in the system arises from the current harvest. The current harvest has a direct effect on agricultural investment and an indirect impact upon current industrial investment through influence upon the gross profits. Another important feedback loop involves the influence of the real industrial wage upon the labor participation of the urban population. There are several other feedback elements in the model, but those mentioned are the major sources of simultaneity in the system. In our experiments with Model I in the second year of the project, we intend to investigate other promising macroeconomic interactions.

SECTION THREE: INSIGHTS GAINED THROUGH ECONOMETRIC STUDY OF THE SOVIET UNION

When an economist builds an econometric model of a Western market economy, he may draw upon a rich theoretical literature that identifies crucial behavioral components of the macroeconomic system as well as developed tradition of model construction. In approaching the same task for a centrally-planned Soviet-type economy, while there does not exist a comparable theoretical and econometric literature, the analyst is presented with an unusually rich descriptive and statistical literature. One of the most exciting tasks in current research on the Soviet economy involves the testing and quantification of hypotheses explicit and implicit in our "received wisdom". We hope that the initial efforts described in this report will serve to stimulate other econometric studies and motivate specialists in this area to evaluate critically the assumptions, procedures and conclusions of such work.

Econometric and descriptive analysis of the Soviet economy should be complementary activities for purposes of understanding, policy analysis and forecasting. An important virtue of the econometric discipline is that it requires one first to conceptualize and estimate regularities of behavior. At that stage, anomalies and disturbances are both clarified and brought into perspective. Almost unavoidably, the "special events" loom large in any descriptive analysis. Within the framework of an econometric model, the analyst is able to discriminate among these "special events", incorporating those of significant impact into an econometric history of the USSR.

An Econometric History of the Soviet Union

In our first year of this project, we feel that notable steps have been taken in developing an econometric history of the USSR for the past two decades. As indicated above, such a history rests first upon a tenable abstraction of economic behavior, a system of operational relationships with both theoretical and statistical content. Second, it should clearly date and quantify the significant changes in economic policy and pure exogenous variables. We will emphasize the first aspect of our econometric history of the USSR as we indicate the major insights into the operation of the Soviet economy that we have gained during the construction of our model. The rest of this section is organized in accord with the components introduced in Section Two.

(1) Factor Supply Equations*

Many of the most interesting discoveries arose during the estimation of capital formation equations for the various sectors of the Soviet economy. In principle, there should be technical relations that phase current and past investment into additions to capital stock (basic funds in Soviet capital accounting). However, we soon recognized that the timing of project completions for certain sectors was quite sensitive to the Five-Year-Plan cycle, i.e., whether a particular year falls toward the beginning or the end of the Five-Year-Plan then in operation. After considerable experimentation, we selected one timing dummy variable which best captured the impact of investment planning institutions. This variable was constructed to reflect a concentration of project completions toward the end of a Five-Year-Plan and spilling over into the initial year of the subsequent Plan, and it made special allowance for the Seven-Year-Plan (1959-1965). In evaluating the gestation lags for sectoral investment

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*See Working Paper #18 for a fuller discussion of these matters.

we also observed the impact of construction priorities; the services and trade sector, in particular, had an unusually long lag of three to four years and was less predictable than other sectors.

The estimation of capital formation equations also identified several anomalies in the official data for sectoral capital stock, that is on years in which the observed change in capital stock could not be reconciled statistically with the observed investment series. In two cases, we concluded that there had been an undisclosed accounting transfer of capital stock between sectors: a transfer from industry to transport in 1958 and a transfer from industry to housing in 1962. We adjusted the corresponding capital stocks, to make each series more consistent, before estimating sectoral production functions.

On the employment side, our estimations tended to confirm the urban drift of Soviet population to increase after a harvest failure, to diminish with the reduction of urban/rural income differentials, and to increase with greater urban housing availability. Participation of the rural population in agricultural employment rose during and immediately after a harvest failure, and private agricultural activity increased after harvest failures. Participation in nonagricultural employment varied directly with increases in the industrial real wage and also rose toward the end of a Five-Year-Plan. We also found that the allocation of nonagricultural employees across sectors was sensitive to past investment ratios, confirming the anticipated pattern of wage fund budgeting from year to year.

(2) Sectoral Production Functions

Substantial econometric work has been done previously on production functions for Soviet industry, at the aggregate and branch levels. Because of the serious statistical problem posed by the high correlation between industrial inputs and output, it is impossible to choose "the" correct specification of aggregate industrial output. Our model includes as alternatives both a Cobb-Douglas and a CES production function for Soviet industry, each being estimated with constraints on factor elasticities. Each performs adequately over the sample period 1955-1972, but they suggest quite different longrun forecasts for Soviet growth.

Some new ground was broken in estimating production functions for construction and for transport and communications We found slightly increasing returns in Soviet construction though this was in a specification excluding disembodied technical progress. In transport and communications we confirmed the earlier estimations for Soviet railroads by Holland and Helen Hunter. We found changes in output best explained by capital stock (adjusted for the 1958 transfer), specialist manpower, and a railway utilization index.

Economists who have used standard methods to estimate production functions for Soviet agriculture have frequently been discouraged by high estimates for the labor elasticity and returns to scale. Apparently, this result arises from the observed correlation in the short run between summer precipitation and man-days worked. To overcome this problem, we adoped a two-step estimation procedure. First we computed a "potential output" series by connecting peaks in agricultural output. Then we estimated a Cobb-Douglas production function for potential output using mandays and capital stock; we found a very reasonable result with nearly constant returns to scale and a labor elasticity of about 0.55. We then found that deviations from potential output so determined could be explained by weather variables for spring-summer precipitation and winter temperature, current purchases (fertilizer, fuel, etc.) per ruble of fixed capital, and the ratio of labor input to sown acreage.

(3) Investment Functions

Confirming previous work by Stanley Cohn and others, we found nonagricultural investment to be acutely sensitive to the level of defense expenditure (actually, the nonpersonnel component). At least in the short run, an increase in defense spending tends to crowd out investment in industry and the services and housing sector. We also found an impact of the financing plan, published in the Annual Budget, upon realized investment in industry, construction, transport and communications, and housing. Furthermore, we found that the level of gross profits in the economy had a significant positive impact upon the level of industrial investment (and total nonagricultural investment). This finding is consistent with a number of hypotheses about investment determination, and we have made some progress toward discriminating among them. In this regard, it is surprising that gross profits are more significant than profits retained for decentralized investment. Thus, a micro financial cash-flow theory for industrial investment is not supported by our work. Furthermore, economy-wide gross profits are a better predictor than are industry gross profits. This might support the argument that under socialism national saving may be quickly reallocated to where investment needs are greatest without the necessity for complex capital markets as in the West. Tentatively, we lean toward the hypothesis that profits in the Soviet economy, as in Western economies, are a positive proxy for supply conditions, including the state of the harvest. This may suggest that the Soviet financial system intervenes in the investment process to adjust investment demand to the supply situation.

Investment in agriculture has been rising sharply since 1965. Most of the variation around that trend can be explained by current and past harvests. The current harvest has a direct impact upon investment through decentralized construction activity by state and collective farms; such work is curtailed during harvest failures. We also find evidence of a pattern of "crisis response" by the Soviet leadership; i.e., agricultural investment is boosted after each harvest failure while there is no symmetrical reaction to bumper harvests. This reaction pattern is also observed for current purchases, deliveries from other sectors as inputs to agricultural production: deliveries are boosted after each harvest failure.

(4) Income, Wage and Price Equations

It was a pleasant surprise to find that real wage rates in Soviet industry and agriculture could be reasonably explained by a fairly simple model. In our model, the real wage, in the longer-run, bears a stable relationship to average productivity while the price level is determined by a markup on wage costs per unit of output. In the shortrun, there is a partial adjustment of real wages (scaled by last period's price level) toward current average productivity. Given Soviet institutions, it is not surprising that adjustment parameters for both wages and prices need to be variable rather than constant in order to incorporate the timing of major reforms For the 1960's, the gap between average productivity and the real wage widened in most years, closing significantly only in years of major wage reform.

In our work on Soviet prices, it is difficult to choose an indicator for "free" agricultural prices. After considering the Soviet official series for kolkhoz market prices, we followed a suggestion of Professor Treml's and constructed an aggregate index from Narkhoz statistics on the "sales of foodstuffs to consumer cooperatives at negotiated prices." Because of its more reasonable pattern after the mid-1960's, we have incorporated the latter index into our consumption price index for food. By allowing reforms to affect adjustment rates, we have developed an acceptable system for other price relationships based upon the markup principle. We have also estimated equations to explain the movement of sectoral investment deflators, prices which are implicit in the official "constant price" investment series. Each investment deflator depends upon the price index for construction-installation work (an exogenous variable in our model) and the wholesale price index for heavy industry. We chose not to use the official price index for machine-building and metal-working, a series quite untrustworthy because of the new-product pricing bias.

(5) Consumption Functions

It was possible to estimate stable relationships between disposable income and consumption and the estimated propensities to consume were rather similar to those for other economies at a corresponding stage of development. Our major efforts were devoted to estimating price effects and considering relevant supply constraints. The relative consumption price between food and nonfood commodities proved significant in the allocation of consumption across categories. Furthermore, we found clear evidence for harvest constraints on food and soft goods consumption, and some evidence for other supply constraints on durable goods and services. We did not find any evidence to support the often-discussed impact of savings account accumulation upon purchases of durable goods; this effect may still be valid at the micro level for certain income groups but our findings did not substantiate it at the aggregate level.

(6) Foreign Trade

Foreign trade proved to be one of the most difficult components of the model, a resuilt which probably stems from the classification problems in the date (the complete plant difficulty among others), the short sample period for consistent data, and the fundamental nonregularity of a Soviet trade policy. Many important swings could not be predicted except through the mobilization of extensive descriptive literature. We did find, however, plausible impacts of domestic and foreign activity upon Soviet trade flows and a few significant price effects.

We found only weak, if any, confirmation for the widely-held hypothesis that Soviet exports are determined by import needs. On the contrary, in some formulations we found in the shortrun that exports were actually somewhat less in years of domestic scarcity and high imports. An alternative hypothesis is suggested which emphasizes the importance of supply pressure; viz., in those years when taut plans require additional imports, industries which produce for both domestic and foreign users react more to domestic needs and curtail their exports.

Since the USSR is rapidly expanding its foreign trade with the developed West, further work needs to be done on this component of the model and considerable judgment will be required in forecasting Soviet trade.

Anticipated Gains in Understanding Through the Use of the Model

In this section we have presented some of the insights gained through econometric analysis on specific relations in the model. Beyond these partial insights gained through construction of a model, there are more general discoveries to be made through extensive use of the model for scenarios and forecasts. Within the framework of the entire model, one may experiment with alternative versions of a particular equation or a particular component. The model allows one to evaluate the total influence of one variable upon another, both direct and indirect. This work has only begun and we intend to exercise the model more during ~~the second~~ year of the project, involving a wider constituency in judging the contribution of the econometric model to our understanding of the Soviet economy.

SECTION FOUR: USE OF THE ECONOMETRIC MODEL FOR SCENARIO ANALYSIS

In this section of the report we discuss the major variations which may be used in simulating the model and we describe two conditional scenarios in some detail. In scenario analysis, the user must first decide what version of the model should be selected for his particular problem; the version of the model is determined in operation by setting certain logical switches for the solution program Second, the user must supply all the necessary assumptions and adjustments that define the scenario in contrast to the economic path actually observed. The model will then be simulated or solved for the desired historical period and a supplementary program is used to display, numerically and graphically, the scenario path compared to the actual path or another simulated path.

Alternative Versions of the Model

In setting up the estimated model for solution, we have programmed alternative versions for certain components of the system, notably consumption and investment. A version of the model is defined by the particular components included in the system for that specific simulation. In addition to the versions described below, we can create further versions by making certain sectors of the model exogenous. For example, we might choose to make all foreign trade variables exogenous; i.e., use the actually observed trade flows rather than those predicted by our behavioral equations. By contrast, we might wish to focus only upon the direct interactions between production and foreign trade, and therefore exogenize the rest of the model to preclude any indirect effects.

(1) Basic Version of the Model

The basic version of the model provides a benchmark for judging the sample-period performance of all other versions. Plan budgeting data is used in the prediction of sectoral investment and total nonagricultural investment is obtained by identity as the sum of its predicted components. Consumption categories (food, softgoods , durables and personal services) are estimated directly with aggregate consumption as their sum, or as shares of total consumption when that is estimated directly. There is no end-use category which serves as a residual item; a simulation residual in the model absorbs any generated imbalance between GNP supplied and GNP demanded.

The performance of this version of the model over the period 1961-1972 has been very encouraging. For Gross National Product by producing sector, we find in dynamic simulation a mean absolute error of 3.7 Billion 1970 rubles, or a root-mean-squared percentage error of 1.65%. For industrial output we find a RMS% error of 2.19% with the major prediction errors in the model's overprediction for 1964-1969. For agricultural output, the dynamic simulation produces a RMS% error of 2.23% with the largest prediction error in 1969 where we fail to capture the harvest decline (we do much better for 1963 and 1972). Among the principal end-use categories, we generate a RMS% error of 1.35% for total investment and 1.57% for total consumption expenditure. As expected, the prediction errors are larger for foreign trade with a 2.89% error for total Soviet exports and 6.14% error for total Soviet imports. A large portion of trade errors are attributable to underprediction for 1972. Detailed trade data was not available for 1972 so the trade sector was estimated only with time series to 1971. The error in total consumption is larger (1.81% compared with 1.57%) when it is predicted directly with a single behavioral equation rather than computed by summing the direct estimations for categories of consumption. Error statistics are shown in Table 3.

TABLE 3

Dynamic Simulation Error Properties, 1961-1972

Basic Version of the Model

Variable		Root-Mean Squared Percentage Error	Mean Absolute Error	Mean Absolute Percentage Error
GNP	GNP (B 1970 Rubles)	1.65%	3.7	1.36%
XITOT	Industrial Output (1970=100)	2.19	1.5	1.93
XATOT	Agricultural Output (B 1955 Rubles)	2.23	1.01	1.74
XCRUB	Construction Output (B 1970 Rubles)	2.98	1.0	2.76
ITOTAL	Total Investment (B 1970 Rubles)	1.35	0.7	1.10
IIN	Investment in Industry (B 1970 Rubles)	1.53	0.3	1.21
IA	Investment in Agriculture (B 1970 Rubles)	4.05	0.4	3.39
CR	Total Consumption (B 1970 Rubles)	1.57	2.1	1.15
CRF	Consumption, Food (B 1970 Rubles)	2.05	1.4	1.49
CRND	Consumption, Non-durables (B 1970 Rubles)	2.46	0.8	2.06
CRD	Consumption, Durables (B 1970 Rubles)	2.44	0.2	2.02
CRS	Consumption, Services (B 1970 Rubles)	1.70	0.5	1.23
ZD	Household Income (B 1970 Rubles)	2.36	2.8	1.84
ZPG&	Gross Profits (B Current Rubles)	3.39	1.8	2.98
MWT$	Total Imports (M U.S.$ Current)	6.14	477.4	4.45
EWT$	Total Exports (M U.S.$ Current)	2.89	226.5	2.46
NI	Industrial Employment (Thousand Persons)	0.89	192.2	0.69
NC	Construction Employment (Thousand Persons)	2.66	186.2	2.34
NTA	Agricultural Labor, Adjusted (Thousand Persons)	1.91	649.1	1.68
WI&	Industrial Wage Rate (Rubles/year)	2.03	25.9	1.88
PAFC70	Negotiated Agricultural Price (1970 = 100)	6.97	5.3	6.22

(2) Version with Exogenous Shares for Non-Agricultural Investment

This version enables the user directly to reallocate investment between sectors in scenario analysis or forecasting. Total investment and total nonagricultural investment may be left endogenous to the system or exogenized as are the shares for nonagricultural investment. This permits the user to use the model for forecasting years when the annual budget is not yet determined or available. When we estimate total nonagricultural investment and distribute it with observed investment shares, the errors are slightly larger than in our basic version of the model: 1.69% RMS% error for GNP and 1.37% for total investment.

(3) Version with Total Consumption as a Residual Category

In this version, increases in end-use categories such as defense or investment may depress consumption expenditure since consumption is defined as GNP supplied less all other end-use demands. This version, therefore, is closer in spirit to a common Western perception of Soviet allocative response than is true of the basic version. Since the simulation/forecast residual is forced into the consumption category, one should expect larger errors for consumption. For total consumption, we find a RMS% error of 3.60 compared with 1.57 in the basic version; the largest errors are produced in an overprediction for the mid-1960's. Using the consumption share equations to allocate residual consumption across its categories, the RMS% error rises to 3.64 for food, 4.04 for nondurables, 5.15 for durables, and 3.24 for services.

(4) Version with Consumption Constrained by Sectoral Ouputs Through an I-O Matrix

Using input-output and end-use matrices from the 1966 Input-Output table and supplementary calculations, we computed a synthetic index of deliveries to personal consumption components for the sample period 1955-1972. We then estimated consumption components as functions of those synthetic supply indices (as well as relative prices and other variables). In this version, then, sectoral outputs have a more direct impact upon consumption categories Though we find larger errors in consumption in this version, they are primarily attributable to the 1964-1969 overprediction of industrial output. Consequently, we feel that this is an auspicious sign for the incorporation of input-output analysis in our future econometric models of the USSR.

RMS% errors for total consumption and the four categories are as follows:

	Category	RMS% Version (4)	RMS% Version (1)
CR	Total Consumption	2.81	1.57
CRF	Food	2.64	2.05
CRND	Nondurables	6.15	2.45
CRD	Durables	4.25	2.44
CRS	Services	1.21	1.70

Scenario I: Removal of the 1963 Harvest Failure

For this scenario we chose to use the basic variant of the model and substitute average weather conditions (computed over the period 1959-1972) for the cold winter and dry summer of 1963. Given the importance of crisis response to harvest failure, we were interested in both the shortrun and longrun consequences when a harvest failure was removed by adjusting the exogenous weather variables from actual historical values. To present this scenario, we will refer to a sequence of charts which compare the scenario path with a simulation path without counterfactual weather for 1963. In these charts, the + signs indicate the scenario path and the * signs indicate the simulation path with actual weather variables.

We begin with agricultural output in Chart I.1; while XATOT is higher in 1963 in the scenario, it is lower for the rest of the simulation period. The reason for this apparent paradox is given in Chart I.2 for agricultural investment. Investment is higher for 1963 for the scenario path because of decentralized investment by state and collective farms; however, scenario investment in agriculture falls behind in 1964-65 because of the absence of "crisis response" by the Soviet leadership and never catches up to the basic simulation path. The impact of diminished capital on agricultural production would have been even more severe except for the augmentation of the agricultural labor force as seen in Chart I.3. Initially (1964-67), the scenario path lacks the increased participation in response to a harvest failure. However, by 1968, the outmigration of rural population stimulated by the harvest failure has come to dominate the participation effect so that agricultural labor is greater on the scenario path. Because of this decrease in agricultural output and increase in agricultural labor, the average labor productivity is less on the scenario path and consequently the agricultural wage rate is diminished as we observe in Chart I.4.

Despite the longrun fall in agricultural output we see in Chart I.5, that scenario GNP is higher by 1968. This results from increased employment and capital stock in the nonagricultural sectors. The increase in nonagricultural employment is somewhat surprising since urban population is initially less on the scenario path. However, the participation rate of the urban population rises because of an increase in the industrial real wage. In turn, the industrial real wage is raised because of the different path of the "negotiated" price for agricultural commodities presented in Chart I.6. The removal of the harvest failure boosts gross profits as seen in Chart I.7 which in turn raises investment in industry, construction, transport and communications, and services and trade. By the end of the 1960's, this additional capital stock has raised production in the nonagricultural sectors and outweighed the decline in agriculture.

Our final comments on Scenario I pertain to the impact upon Soviet foreign trade. As seen in Chart I.8, Soviet exports of food to CMEA economies are larger in 1963-65 under the scenario but smaller thereafter as agricultural production falls behind. As Chart I.9 indicates, imports of wheat and wheat flour from the West are much less in 1964 without the harvest failure but are greater from 1965 on because of the lower scenario production. Other trade flows are also affected but the third intriguing result concerns imports of machinery and manufactures from the West, an effect presented in Chart I.10. These imports are greater in 1963 and 1964, but less from 1965 on, partially in compensation for the increased wheat imports from the West.

Scenario II: A Soviet Defense Build-up, 1965-1967

The actual path of Soviet defense expenditures in the postwar period remains quite a controversial issue among Western analysts. Stanley Cohn has used the official Soviet defense budget supplemented by some proportion of USSR expenditures on science to cover military R&D and military space programs. Most likely, additional defense expenditures are concealed in the financing component of the State budget or elsewhere; however, there is no concensus as to the magnitude of that concealed expenditure or about its movement over time. If such a component varies considerably over the 1960's, then we have not fully accounted for defense impacts upon the Soviet economy in our model construction. Nevertheless, we have been successful in deriving significant defense impacts, particularly upon investment and consumer durables, using only the nonpersonnel component of the official series for defense expenditures.

Many Western analysts have suggested that a major buildup in military hardware took place from 1965 to 1967 without any substantial rise in the official budget. Certainly, in our work we have noted anomalies in just this period; e.g., a shortfall in industrial investment below its predicted level and a drop in factor productivity in Soviet industry. Consequently, we felt that an interesting scenario would be to augment the official defense budget by, say, 2 billion rubles for each year 1965-1967 and examine the impact upon the national economy. Unlike Scenario I, where we know the actual weather conditions in 1963, in Scenario II, we do not know the true level of defense expenditures in 1965, only the official budget. With a significantly different series for Soviet defense expenditures, one would need to reestimate certain components of the model (particularly the investment functions). We have not done this so far for any alternative expenditure series for defense.

In Chart II.1, we note with some surprise the magnitude of the defense impact upon total investment when all the direct and indirect effects are taken into account. Investment falls by nearly as much (95%) as defense rises. This impact is felt upon all nonagricultural sectors with a 0.9 B ruble fall in industrial investment (Chart II.2), a 0.3 B ruble fall in transport/communications investment (Chart II.3), a 0.4 B ruble fall in housing investment (Chart II.4), and a 0.3 B ruble fall in services/trade investment (Chart II.5) for the years 1965-1967. There was also a very small reduction in investment in the construction industry. As a consequence of reduced non-agricultural capital, we see a reduced GNP in Chart II.6, the reduction amounting to 1.5 billion rubles by 1970.

This diminished capital stock produces a very interesting longrun impact on our model of the Soviet economy. Average labor productivity is less in Soviet industry and this restrains the rise in the industrial wage as seen in Chart II.7. This lowers money incomes and household consumption, thereby adjusting on the demand side to the reduction in GNP supplied. For consumption of durable goods (Chart II.8), we see first the crowding-out effects of defense spending in 1965-1967 and then the delayed income effect from 1968 onwards. This reduction in urban incomes slows the population drift away from agriculture, this lowers slightly nonagricultural employment (Chart II.9) and raises agricultural employment and agricultural output (Chart II.10). The reduction in Soviet GNP serves over the longrun to lower total imports by slightly less than 1% (Chart II.11) and total exports by about 0.2% (Chart II.12).

<u>Conclusions</u>

In these two scenarios and others that we have run, the model has demonstrated quite reasonable behavior. However, the user of the model must be careful in scenario analysis not to push the system unreasonably far from the historical values for exogenous variables. We feel that our analysis has produced a model which simulates Soviet economic behavior quite well in the neighborhood of the historical path. But to drive the model far from that historical path makes the strong assumption that behavior would be unchanged in quite different circumstances. In the case of Scenario II, for example, a 2 billion ruble increase in defense spending is comparable to actually observed annual changes. However, a 10 billion ruble increase in 1965 would be quite far from the historical record and one would have less confidence in the consequent path traced by the model.

SCENARIO I. ABSENCE OF 1963 HARVEST FAILURE
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO I COLUMN: REMOVE 1963 HARVEST FAILURE DYN WHOLE

VARIABLE GRAPHED: NTA TOTAL AGRICULTURAL EMPLOYMENT THOUS.PERSONS

GRAPH RANGE OF VALUES: 37260.0 TO 40290.9

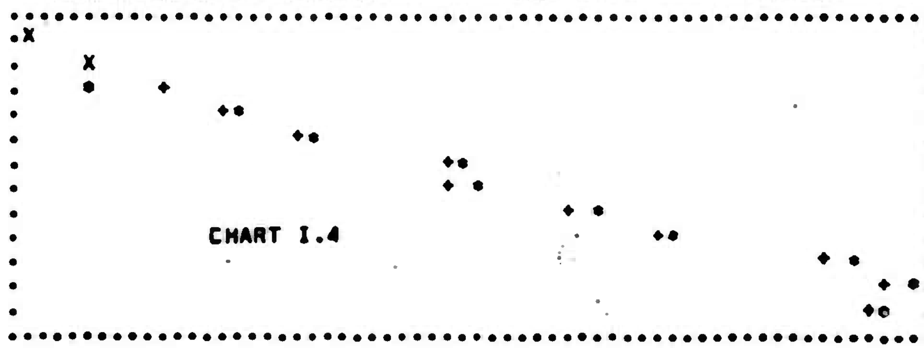
DATE	SIMULATION (•)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	40290.9	40290.9	0.0	0.0
1962	40359.9	40059.9	0.0	0.0
1963	39423.7	39751.6	-327.9	-0.83
1964	39481.8	39417.1	64.7	0.16
1965	40232.8	40058.4	174.4	0.43
1966	40141.1	39808.4	332.6	0.83
1967	39517.0	39223.7	293.3	0.74
1968	38946.9	39008.4	-61.6	-0.16
1969	38517.5	38734.0	-216.5	-0.56
1970	38130.4	38277.7	-147.3	-0.39
1971	37765.5	37922.9	-137.4	-0.36
1972	37260.0	37498.1	-228.1	-0.61

SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 165.5
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.42
ROOT MEAN SQUARED ERROR...........: 200.4
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.51

VARIABLE GRAPHED: WASCR WAGE RATE, STATE AND COLLECTIVE FARMS RUBLES/YEAR

GRAPH RANGE OF VALUES: 391.5 TO 1041.7

DATE	SIMULATION (•)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	391.5	391.5	0.0	0.0
1962	439.2	439.2	0.0	0.0
1963	436.7	490.2	-53.5	-12.25
1964	541.3	538.1	3.2	0.59
1965	601.0	589.8	11.1	1.85
1966	708.9	695.8	13.1	1.85
1967	718.6	705.3	13.3	1.85
1968	805.5	791.0	14.6	1.81
1969	870.5	855.7	14.8	1.70
1970	992.9	975.7	17.1	1.73
1971	1041.7	1023.2	18.4	1.77
1972	1022.4	1003.9	18.5	1.81



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 14.8
MEAN ABSOLUTE PERCENTAGE ERROR....: 2.27
ROOT MEAN SQUARED ERROR...........: 19.9
ROOT MEAN SQUARED PERCENTAGE ERROR: 3.03

36a

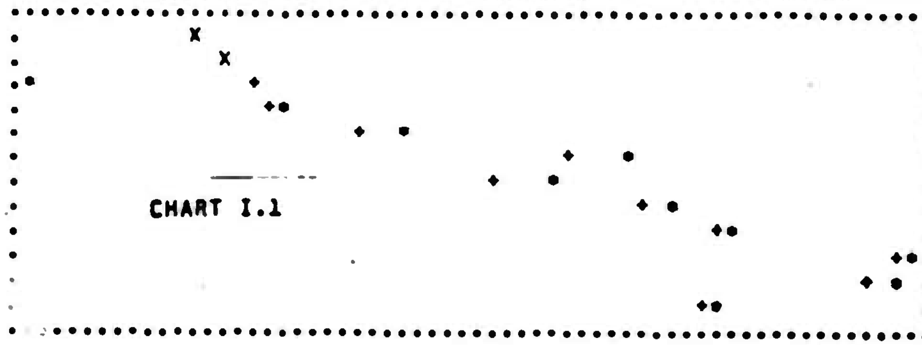
SCENARIO I. ABSENCE OF 1963 HARVEST FAILURE
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO I COLUMN: REMOVE 1963 HARVEST FAILURE DYN WHOLE

VARIABLE GRAPHED: XATOT   TOTAL AGRICULTURAL OUTPUT   M.1965 RUBLES

DATE	SIMULATION (•)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	51556.8	51556.8	0.0	0.0
1962	52269.3	52269.3	0.0	0.0
1963	46996.8	53193.5	-6196.7	-13.19
1964	54085.0	53707.5	377.5	0.70
1965	57024.3	55914.8	1109.6	1.95
1966	63107.0	61707.3	1399.7	2.22
1967	61072.0	59798.0	1273.9	2.09
1968	64399.9	63658.0	741.9	1.15
1969	66064.7	65631.6	433.1	0.66
1970	71047.2	70441.5	605.7	0.85
1971	70606.7	69959.7	647.0	0.92
1972	65703.9	65225.5	478.4	0.73

GRAPH RANGE OF VALUES: 46996.8 TO 71047.2

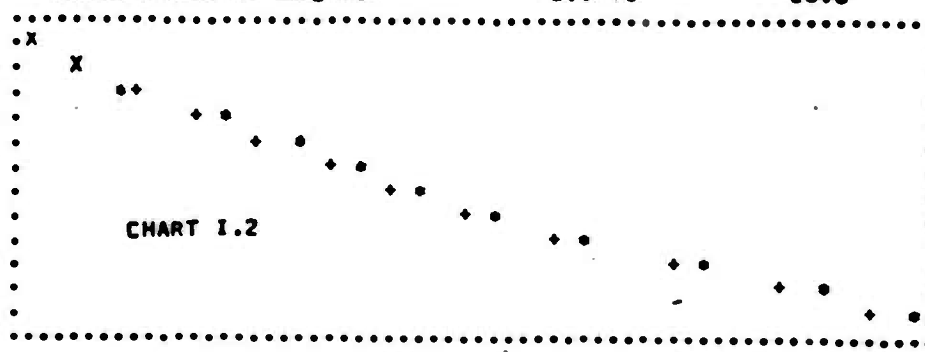


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 1105.3
MEAN ABSOLUTE PERCENTAGE ERROR....: 2.04
ROOT MEAN SQUARED ERROR............: 1938.8
ROOT MEAN SQUARED PERCENTAGE ERROR: 3.99

VARIABLE GRAPHED: IA   PRODUCTIVE INVESTMENT IN AGRICULTURE   B.1970 RUBLES

DATE	SIMULATION (•)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	5.9	5.9	0.0	0.0
1962	6.5	6.5	0.0	0.0
1963	7.0	7.1	-0.1	-1.25
1964	8.3	7.9	0.4	4.69
1965	9.1	8.6	0.4	4.54
1966	9.9	9.5	0.4	3.70
1967	10.6	10.2	0.4	4.00
1968	11.5	11.1	0.4	3.09
1969	12.7	12.3	0.4	3.16
1970	14.1	13.6	0.5	3.25
1971	15.6	15.0	0.5	3.35
1972	16.6	16.0	0.6	3.42

GRAPH RANGE OF VALUES: 5.9 TO 16.6



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 0.3
MEAN ABSOLUTE PERCENTAGE ERROR....: 2.88
ROOT MEAN SQUARED ERROR............: 0.4
ROOT MEAN SQUARED PERCENTAGE ERROR: 3.26

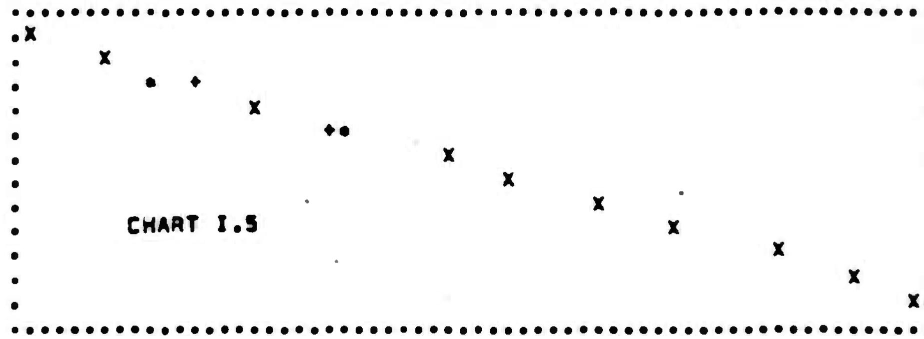
SCENARIO I. ABSENCE OF 1963 HARVEST FAILURE
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO I COLUMN: REMOVE 1963 HARVEST FAILURE DYN WHOLE

VARIABLE GRAPHED: GNP GROSS NATIONAL PRODUCT B.1970 RUBLES

DATE	SIMULATION (•)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	210.2	210.2	0.0	0.0
1962	225.9	225.9	0.0	0.0
1963	235.3	241.6	-6.2	-2.65
1964	256.0	256.0	0.0	0.01
1965	271.8	271.0	0.8	0.30
1966	293.4	292.4	1.0	0.33
1967	[illegible]	304.3	0.3	0.08
1968	323.8	324.2	-0.4	-0.12
1969	330.9	339.3	-0.4	-0.13
1970	356.2	356.4	-0.2	-0.06
1971	375.1	375.4	-0.3	-0.09
1972	365.9	386.4	-0.5	-0.14

GRAPH RANGE OF VALUES: 210.2 TO 386.4

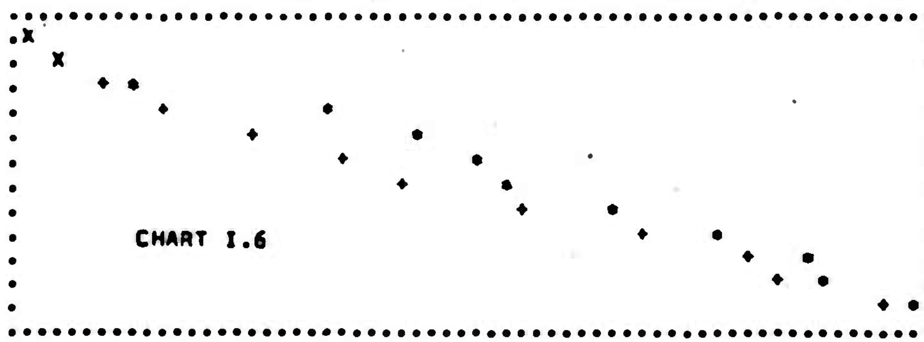


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 0.9
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.33
ROOT MEAN SQUARED ERROR...........: 1.9
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.78

VARIABLE GRAPHED: PAFC70 NEGOTIATED AGRICULTURAL PRICE 1970=100.

DATE	SIMULATION (•)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	60.8	60.8	0.0	0.0
1962	69.6	69.6	0.0	0.0
1963	72.1	71.1	1.0	1.32
1964	78.6	73.3	5.4	6.84
1965	81.5	76.2	5.2	6.42
1966	83.6	79.1	4.5	5.41
1967	84.5	80.9	3.6	4.25
1968	87.9	85.1	2.8	3.17
1969	91.4	89.1	2.3	2.54
1970	94.3	92.3	2.0	2.10
1971	95.0	93.5	1.5	1.56
1972	97.9	96.9	1.0	1.00

GRAPH RANGE OF VALUES: 60.8 TO 97.9



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 2.4
MEAN ABSOLUTE PERCENTAGE ERROR....: 2.88
ROOT MEAN SQUARED ERROR...........: 3.0
ROOT MEAN SQUARED PERCENTAGE ERROR: 3.67

36c

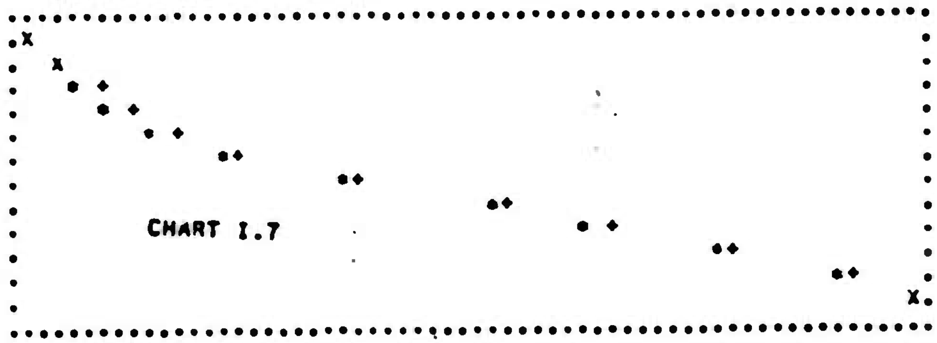
SCENARIO I. ABSENCE OF 1963 HARVEST FAILURE
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO I COLUMN: REMOVE 1963 HARVEST FAILURE DYN WHOLE

VARIABLE GRAPHED: ZPGS   GROSS PROFITS, NATIONAL ECONOMY   M.CURR.RUBLES

DATE	SIMULATION (*)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	28.0	28.0	0.0	0.0
1962	30.9	30.9	0.0	0.0
1963	31.6	33.6	-2.2	-6.96
1964	34.3	36.6	-2.2	-6.34
1965	37.8	39.8	-2.0	-5.30
1966	43.2	45.0	-1.7	-4.03
1967	52.8	54.3	-1.5	-2.93
1968	65.3	66.8	-1.5	-2.32
1969	72.7	74.1	-1.4	-1.94
1970	83.0	84.2	-1.2	-1.44
1971	92.8	93.7	-0.8	-0.91
1972	98.0	98.5	-0.5	-0.51

GRAPH RANGE OF VALUES: 28.0 TO 98.5

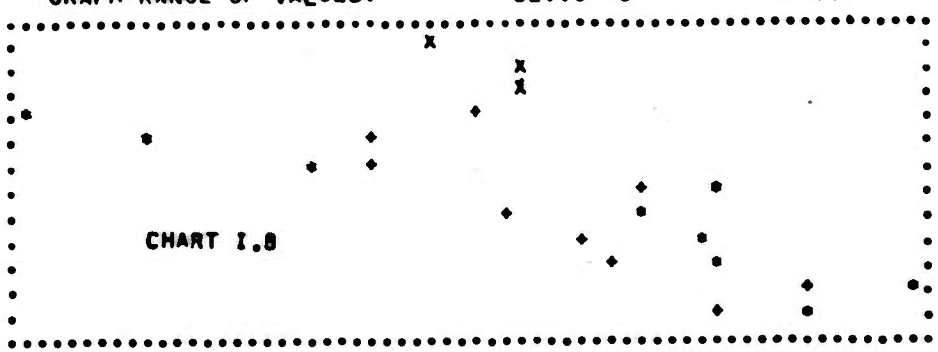


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR................: 1.3
MEAN ABSOLUTE PERCENTAGE ERROR....: 2.75
ROOT MEAN SQUARED ERROR...........: 1.5
ROOT MEAN SQUARED PERCENTAGE ERROR: 3.62

VARIABLE GRAPHED: EEFS   USSR EXPORTS, CMEA, FOOD   M.CURRENT US$

DATE	SIMULATION (*)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	445.7	445.7	0.0	0.0
1962	470.6	470.6	0.0	0.0
1963	470.7	470.8	-0.0	-0.00
1964	329.8	457.8	-128.0	-38.82
1965	364.9	428.7	-63.8	-17.48
1966	409.9	425.1	-15.2	-3.70
1967	522.9	503.0	19.9	3.81
1968	503.2	466.3	36.9	7.33
1969	522.0	486.0	36.0	6.90
1970	523.4	495.0	28.4	5.43
1971	579.7	550.1	29.6	5.11
1972	551.8	523.7	28.1	5.10

GRAPH RANGE OF VALUES: 329.8 TO 579.7



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR................: 32.2
MEAN ABSOLUTE PERCENTAGE ERROR....: 7.81
ROOT MEAN SQUARED ERROR...........: 46.7
ROOT MEAN SQUARED PERCENTAGE ERROR: 12.99

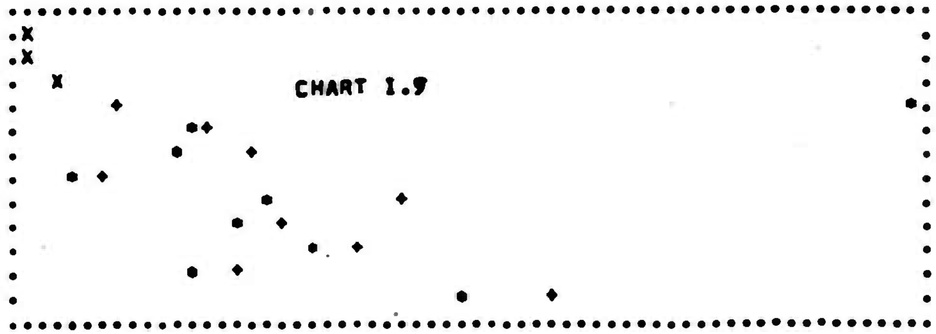
SCENARIO I. ABSENCE OF 1963 HARVEST FAILURE
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO I COLUMN: REMOVE 1963 HARVEST FAILURE DYN WHOLE

VARIABLE GRAPHED: MIW1 USSR IMPORTS.WEST.WHEAT & WHEAT FLOUR M.CURRENT US$

DATE	SIMULATION (+)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	23.1	23.1	0.0	0.0
1962	20.9	20.9	0.0	0.0
1963	40.9	40.9	-0.0	-0.08
1964	548.4	70.5	477.9	87.15
1965	117.9	132.3	-14.3	-12.14
1966	111.1	154.2	-43.2	-38.88
1967	44.3	65.1	-20.7	-46.79
1968	167.7	241.2	-73.4	-43.77
1969	143.0	175.0	-32.0	-22.35
1970	194.0	218.1	-24.2	-12.47
1971	123.6	143.8	-20.2	-16.35
1972	282.3	331.8	-49.5	-17.54

GRAPH RANGE OF VALUES: 20.9 TO 548.4

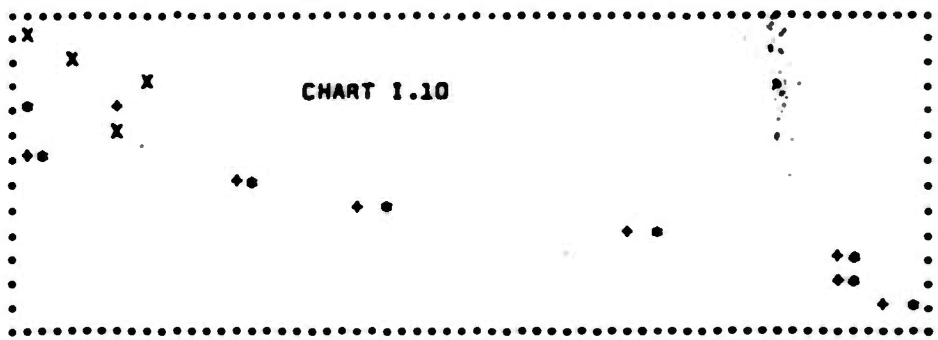


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR....................: 63.0
MEAN ABSOLUTE PERCENTAGE ERROR....: 24.79
ROOT MEAN SQUARED ERROR...........: 141.6
ROOT MEAN SQUARED PERCENTAGE ERROR: 34.07

VARIABLE GRAPHED: MIL.S USSR IMPORTS.WEST.MACHINERY & MANUF. M.CURRENT US$

DATE	SIMULATION (+)	SCENARIO I (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	711.2	711.2	0.0	0.0
1962	744.0	744.0	0.0	0.0
1963	612.8	616.7	-3.9	-0.48
1964	705.2	788.2	-83.0	-11.77
1965	788.1	781.7	6.3	0.80
1966	722.3	710.8	11.5	1.60
1967	907.3	888.4	18.9	2.09
1968	1024.8	999.6	25.2	2.46
1969	1274.0	1251.2	22.8	1.79
1970	1453.8	1435.5	18.3	1.28
1971	1450.9	1428.5	22.3	1.54
1972	1502.1	1475.4	26.7	1.78

GRAPH RANGE OF VALUES: 705.2 TO 1502.1



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR....................: 19.9
MEAN ABSOLUTE PERCENTAGE ERROR....: 2.13
ROOT MEAN SQUARED ERROR...........: 29.1
ROOT MEAN SQUARED PERCENTAGE ERROR: 3.08

36e

SCENARIO II. A SOVIET DEFENSE BUILDUP 1965-1967
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO II COLUMN: SOVIET MODEL

VARIABLE GRAPHED: ITOTAL INVESTMENT, NATIONAL ECONOMY R.1970 RUBLES

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	44.3	44.3	0.0	0.0
1962	46.5	46.5	0.0	0.0
1963	48.7	48.7	0.0	0.0
1964	53.4	53.4	0.0	0.0
1965	57.4	55.5	1.9	3.25
1966	61.2	59.3	1.9	3.10
1967	65.9	64.0	1.9	2.[illegible]
1968	70.2	70.1	0.0	0.05
1969	75.7	75.6	0.0	0.05
1970	82.0	82.0	0.0	0.05
1971	86.1	86.0	0.0	0.05
1972	93.5	93.5	0.0	0.05

GRAPH RANGE OF VALUES: 44.3 TO 93.5

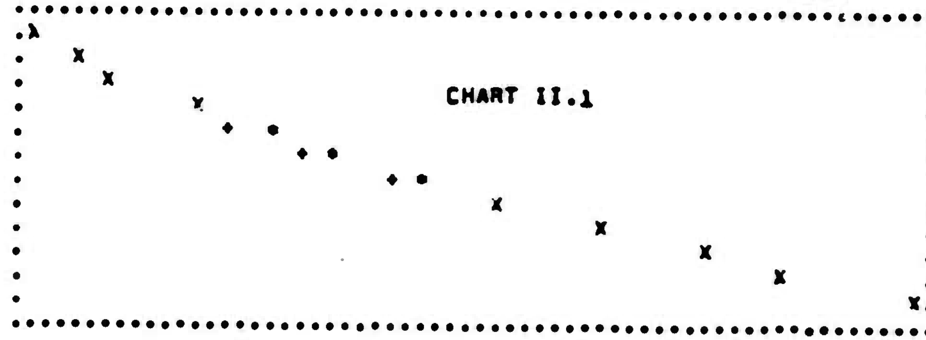


CHART II.1

SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 0.5
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.79
ROOT MEAN SQUARED ERROR...........: 0.9
ROOT MEAN SQUARED PERCENTAGE ERROR: 1.54

VARIABLE GRAPHED: IIN INVESTMENT, INDUSTRY R.1970 RUBLES

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	15.9	15.9	0.0	0.0
1962	16.9	16.9	0.0	0.0
1963	17.9	17.9	0.0	0.0
1964	19.9	19.9	0.0	0.0
1965	20.9	20.0	0.9	4.26
1966	21.7	20.8	0.9	4.09
1967	23.0	22.1	0.9	3.80
1968	24.5	24.5	0.0	0.17
1969	26.8	26.8	0.0	0.16
1970	29.5	29.4	0.0	0.16
1971	31.1	31.0	0.0	0.16
1972	34.0	33.9	0.1	0.16

GRAPH RANGE OF VALUES: 15.9 TO 34.0

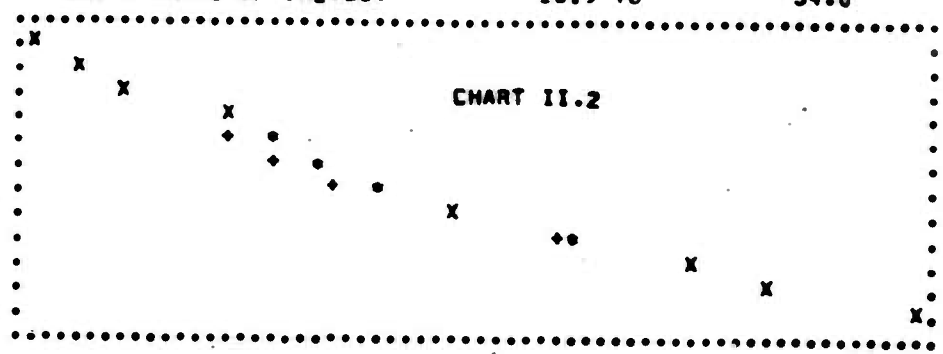


CHART II.2

SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 0.2
MEAN ABSOLUTE PERCENTAGE ERROR....: 1.06
ROOT MEAN SQUARED ERROR...........: 0.4
ROOT MEAN SQUARED PERCENTAGE ERROR: 2.03

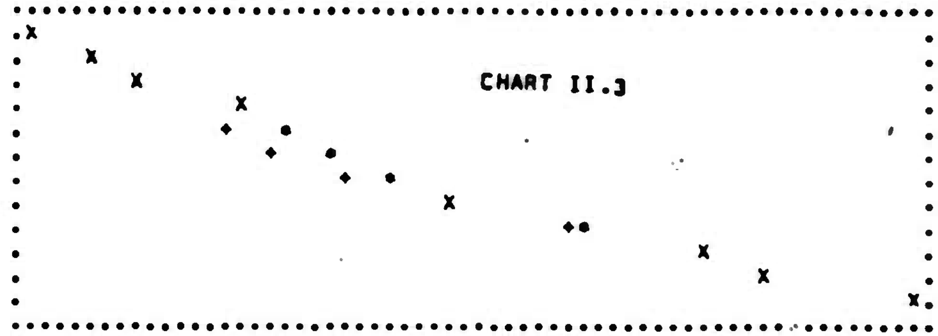
SCENARIO II. A SOVIET DEFENSE BUILDUP 1965-1967
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO II COLUMN: SOVIET MODEL

VARIABLE GRAPHED: ITRUR INVESTMENT, TRANSPORT AND COMMUNICATIONS B.1970 RUBLES

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	4.2	4.2	0.0	0.0
1962	4.6	4.6	0.0	0.0
1963	4.9	4.9	0.0	0.0
1964	5.5	5.5	0.0	0.0
1965	5.8	5.5	0.3	5.20
1966	6.1	5.8	0.3	5.00
1967	6.5	6.2	0.3	4.65
1968	6.9	6.9	0.0	0.21
1969	7.7	7.7	0.0	0.21
1970	8.5	8.5	0.0	0.21
1971	8.8	8.8	0.0	0.20
1972	9.8	9.8	0.0	0.20

GRAPH RANGE OF VALUES: 4.2 TO 9.8

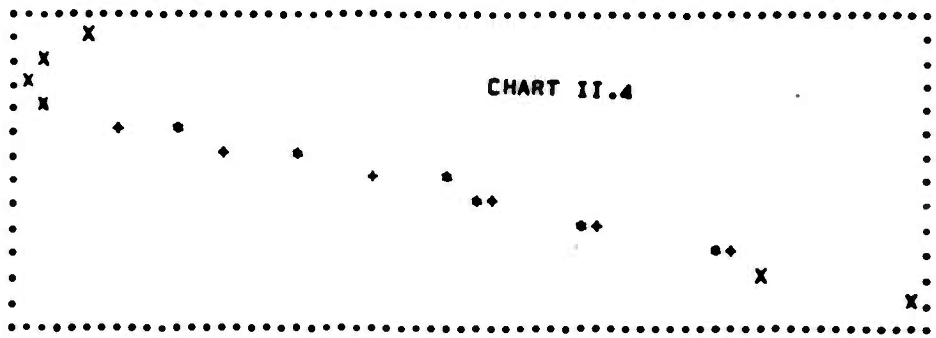


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 0.1
MEAN ABSOLUTE PERCENTAGE ERROR....: 1.32
ROOT MEAN SQUARED ERROR...........: 0.2
ROOT MEAN SQUARED PERCENTAGE ERROR: 2.48

VARIABLE GRAPHED: IHS INVESTMENT, HOUSING B.1970 RUBLES

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	9.5	9.5	0.0	0.0
1962	9.3	9.3	0.0	0.0
1963	9.2	9.2	0.0	0.0
1964	9.3	9.3	0.0	0.0
1965	10.0	9.7	0.4	3.79
1966	10.7	10.3	0.4	3.84
1967	11.5	11.1	0.4	3.48
1968	11.7	11.7	-0.0	-0.13
1969	12.3	12.3	-0.0	-0.13
1970	13.0	13.0	-0.0	-0.13
1971	13.2	13.2	-0.0	-0.13
1972	14.0	14.1	-0.0	-0.13

GRAPH RANGE OF VALUES: 9.2 TO 14.1



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 0.1
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.95
ROOT MEAN SQUARED ERROR...........: 0.2
ROOT MEAN SQUARED PERCENTAGE ERROR: 1.61

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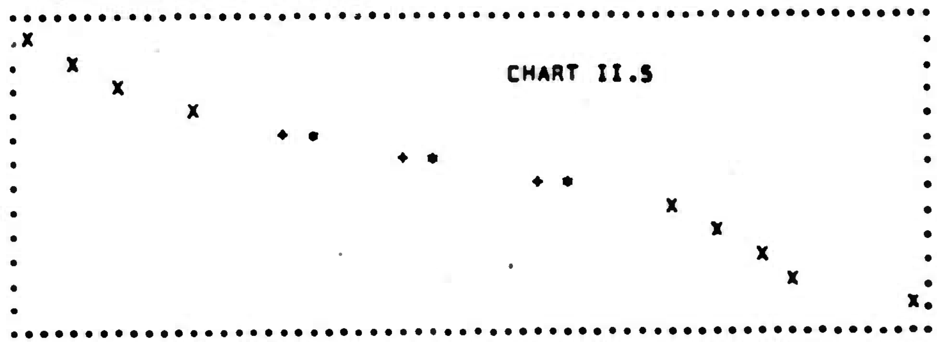
SCENARIO II. A SOVIET DEFENSE BUILDUP 1965-1967
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO II COLUMN: SOVIET MODEL

VARIABLE GRAPHED: ISER   INVESTMENT, SERVICES AND TRADE   B.1970 RUBLES

DATE	SIMULATION (+)	SCENARIO II (*)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	7.4	7.4	0.0	0.0
1962	7.9	7.9	0.0	0.0
1963	8.3	8.3	0.0	0.0
1964	8.9	8.9	0.0	0.0
1965	10.0	9.7	0.3	2.59
1966	11.0	10.6	0.3	2.49
1967	12.3	12.0	0.3	2.50
1968	13.2	13.2	-0.0	-0.07
1969	13.6	13.6	-0.0	-0.07
1970	14.0	14.0	-0.0	-0.07
1971	14.3	14.3	-0.0	-0.08
1972	15.4	15.4	-0.0	-0.07

GRAPH RANGE OF VALUES: 7.4 TO 15.4

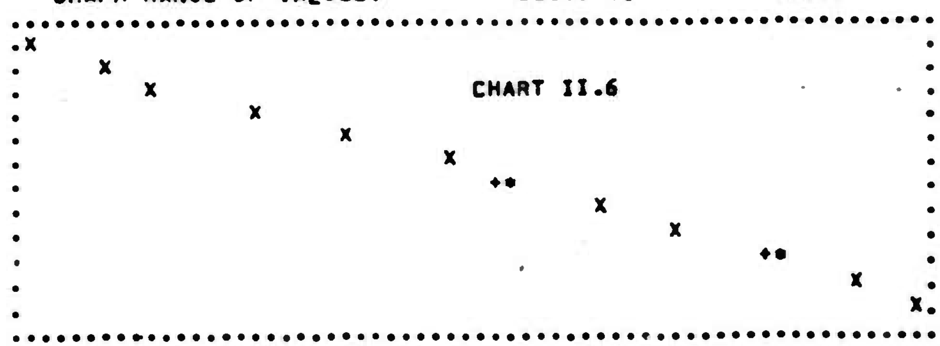


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 0.1
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.65
ROOT MEAN SQUARED ERROR............: 0.1
ROOT MEAN SQUARED PERCENTAGE ERROR: 1.23

VARIABLE GRAPHED: GNP   GROSS NATIONAL PRODUCT   B.1970 RUBLES

DATE	SIMULATION (+)	SCENARIO II (*)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	210.2	210.2	0.0	0.0
1962	225.9	225.9	0.0	0.0
1963	235.3	235.3	0.0	0.0
1964	256.0	256.0	0.0	0.0
1965	271.8	271.5	0.3	0.10
1966	293.4	293.1	0.3	0.10
1967	304.6	303.6	1.0	0.32
1968	323.8	322.5	1.3	0.41
1969	338.9	337.1	1.6	0.52
1970	358.2	356.7	1.5	0.42
1971	375.1	373.7	1.3	0.35
1972	385.9	384.6	1.3	0.33

GRAPH RANGE OF VALUES: 210.2 TO 385.9



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 0.7
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.21
ROOT MEAN SQUARED ERROR............: 1.0
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.29

30b

36i

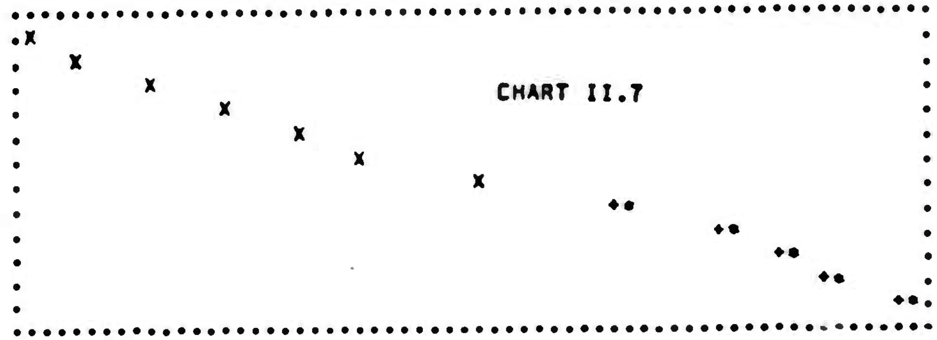
SCENARIO II. A SOVIET DEFENSE BUILDUP 1965-1967
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO II COLUMN: SOVIET MODEL

VARIABLE GRAPHED: WIS — WAGE RATE, INDUSTRY — RUBLES/YEAR

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	1120.5	1120.5	0.0	0.0
1962	1151.6	1151.6	0.0	0.0
1963	1196.1	1196.1	0.0	0.0
1964	1241.6	1241.6	0.0	0.0
1965	1290.5	1290.4	0.0	0.00
1966	1322.5	1321.8	0.7	0.05
1967	1398.3	1394.6	3.7	0.27
1968	1494.4	1486.6	7.8	0.52
1969	1561.2	1550.3	10.9	0.70
1970	1571.7	1560.7	11.1	0.69
1971	1623.1	1613.0	10.1	0.62
1972	1668.0	1658.4	9.6	0.

GRAPH RANGE OF VALUES: 1120.5 TO 1668.0

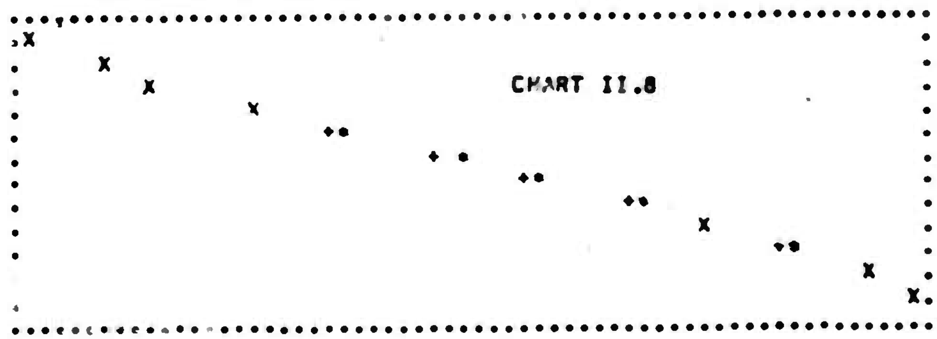


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: [illegible]
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.29
ROOT MEAN SQUARED ERROR...........: 6.5
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.41

VARIABLE GRAPHED: CRD — CONSUMPTION, DURABLE GOODS — B.1970 RUBLES

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	5.9	5.9	0.0	0.0
1962	6.7	6.7	0.0	0.0
1963	7.3	7.3	0.0	0.0
1964	8.4	8.4	0.0	0.0
1965	9.5	9.2	0.2	2.46
1966	10.7	10.4	0.2	2.32
1967	11.6	11.4	0.3	2.18
1968	12.7	12.6	0.1	0.87
1969	13.5	13.4	0.1	0.72
1970	14.4	14.3	0.1	0.59
1971	15.3	15.3	0.1	0.49
1972	15.8	15.7	0.1	0.45

GRAPH RANGE OF VALUES: 5.9 TO 15.8



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 0.1
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.02
ROOT MEAN SQUARED ERROR...........: 0.1
ROOT MEAN SQUARED PERCENTAGE ERROR: 1.22

36i

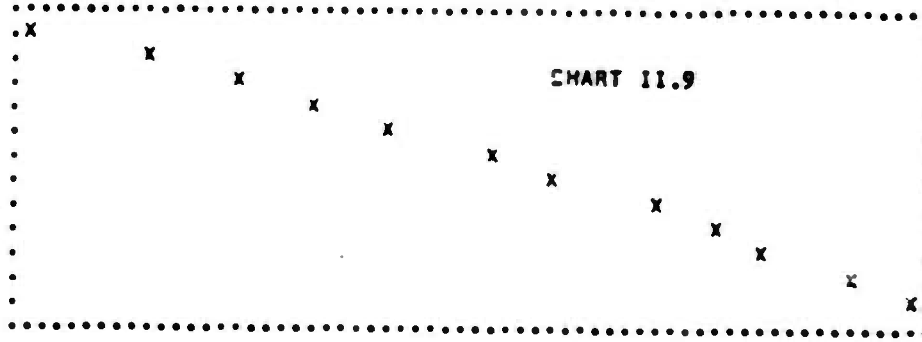
SCENARIO II. A SOVIET DEFENSE BUILDUP 1965-1967
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO II COLUMN: SOVIET MODEL

VARIABLE GRAPHED: [illegible] TOTAL NONAGRICULTURAL EMPLOYMENT THOUS.PERSONS

GRAPH RANGE OF VALUES: 57111.3 TO 84656.2

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	57111.3	57111.3	0.0	0.0
1962	60700.9	60700.9	0.0	0.0
1963	[illegible]	[illegible]	0.0	0.0
1964	[illegible]	[illegible]	0.0	0.0
1965	[illegible]	[illegible]	0.9	0.00
1966	71430.1	71402.2	27.8	0.04
1967	73399.7	73278.3	120.4	0.16
1968	76929.7	76782.5	147.2	0.19
1969	78657.9	78554.5	103.4	0.13
1970	80198.9	80198.6	0.3	0.00
1971	82960.4	82995.0	-35.6	-0.04
1972	84626.0	84656.2	-30.3	-0.04

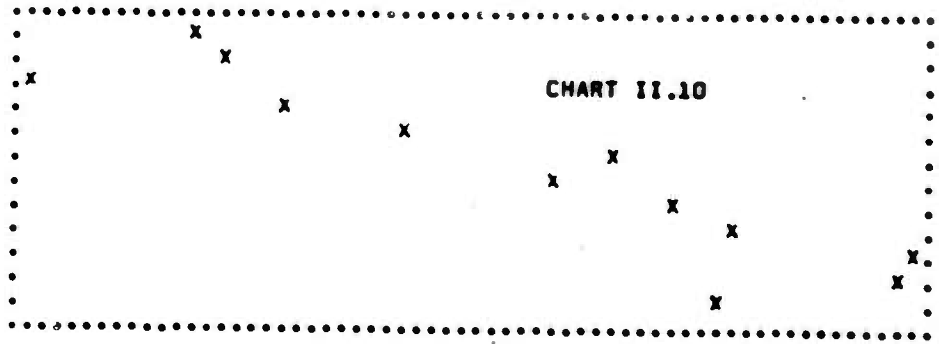


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 30.6
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.05
ROOT MEAN SQUARED ERROR............: 64.4
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.08

VARIABLE GRAPHED: XATOT TOTAL AGRICULTURAL OUTPUT M.1965 RUBLES

GRAPH RANGE OF VALUES: 46996.8 TO 71066.9

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	51558.8	51558.8	0.0	0.0
1962	52269.3	52269.3	0.0	0.0
1963	46996.8	46996.8	0.0	0.0
1964	54085.0	54085.0	0.0	0.0
1965	57624.3	57624.3	0.0	0.0
1966	63107.0	63107.0	0.0	0.0
1967	61072.0	61072.1	-0.1	-0.00
1968	64399.9	64401.9	-2.0	-0.00
1969	66064.7	66075.4	-10.6	-0.02
1970	71047.2	71066.9	-19.8	-0.03
1971	70606.7	70625.1	-18.4	-0.03
1972	65703.9	65710.7	-6.8	-0.01



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR..................: 4.8
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.01
ROOT MEAN SQUARED ERROR............: 8.6
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.01

36j

36b

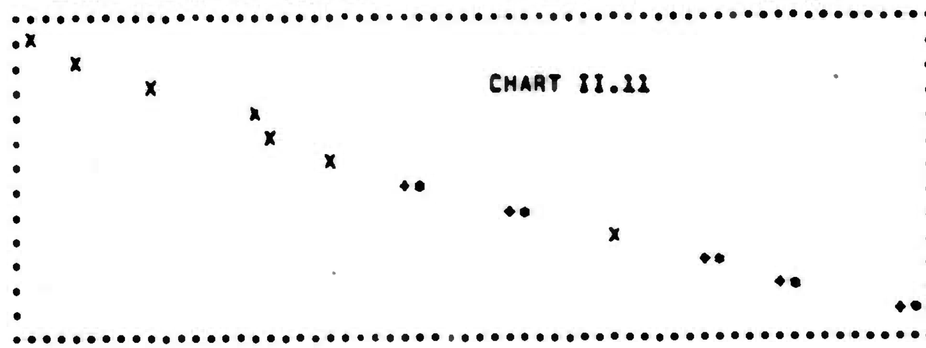
SCENARIO II. A SOVIET DEFENSE BUILDUP 1965-1967
COMPARED WITH BASIC SIMULATED PATH

SIMULATION COLUMN: WHOLE MODEL
SCENARIO II COLUMN: SOVIET MODEL

VARIABLE GRAPHED: MWTI USSR TOTAL IMPORTS M.CURRENT US$

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	5711.1	5711.1	0.0	0.0
1962	6137.9	6137.9	0.0	0.0
1963	6767.2	6767.2	0.0	0.0
1964	7693.7	7693.7	0.0	0.0
1965	7847.9	7832.1	15.9	0.20
1966	8305.1	8282.7	22.4	0.27
1967	9045.9	8997.7	48.2	0.53
1968	9963.5	9890.2	73.3	0.74
1969	10841.4	10740.2	101.2	0.93
1970	11728.5	11616.7	111.9	0.95
1971	12400.3	12296.8	103.5	0.83
1972	13406.2	13304.6	101.6	0.76

GRAPH RANGE OF VALUES: 5711.1 TO 13406.2

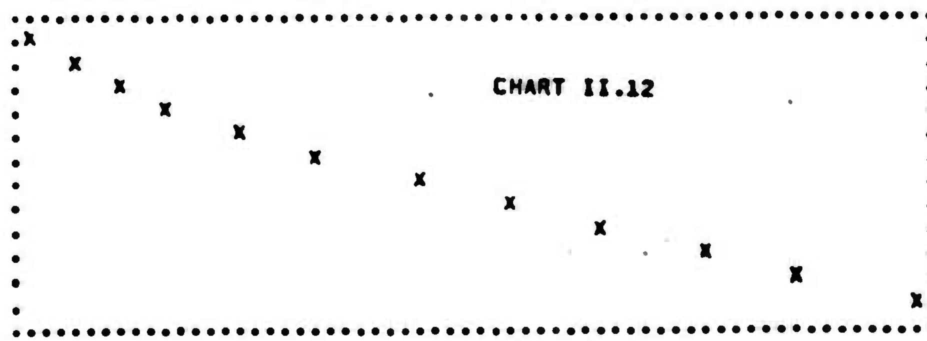


SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 43.2
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.43
ROOT MEAN SQUARED ERROR............: 66.0
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.56

VARIABLE GRAPHED: EWTI USSR TOTAL EXPORTS M.CURRENT US$

DATE	SIMULATION (•)	SCENARIO II (+)	DIFFERENCE (TIE = X)	%DIFFERENCE
1961	6227.2	6227.2	0.0	0.0
1962	6615.3	6615.3	0.0	0.0
1963	7097.7	7097.7	0.0	0.0
1964	7553.1	7553.1	0.0	0.0
1965	8278.5	8277.3	1.3	0.02
1966	9077.7	9074.6	3.1	0.03
1967	9973.9	9961.7	12.3	0.12
1968	10699.8	10677.2	22.6	0.21
1969	11634.0	11603.9	30.1	0.25
1970	12823.2	12793.4	29.8	0.23
1971	13730.3	13703.1	27.2	0.20
1972	14852.5	14826.9	25.6	0.17

GRAPH RANGE OF VALUES: 6227.2 TO 14852.5



SUMMARY STATISTICS: MEAN ABSOLUTE ERROR.................: 12.7
MEAN ABSOLUTE PERCENTAGE ERROR....: 0.18
ROOT MEAN SQUARED ERROR............: 17.9
ROOT MEAN SQUARED PERCENTAGE ERROR: 0.14

36k

SECTION FIVE: USE OF THE MODEL IN FORECASTING

Before using an econometric model in forecasting, one typically performs a variety of tests including mean squared error calculations, multiplier studies and *ex post* forecasting. Furthermore, a new model's forecasting performance is usually compared with that of previous models. In the case of our model, we have recently begun a series of tests that will continue through Fall 1974 in order to assess its characteristics. Though there are no earlier econometric models for the Soviet economy (except for the longer-run Niwa models), one may usefully compare our model's error properties with models for other economies and compare its forecasts with those non-econometric forecasts made by expert observers. In this section of the report we will first describe the necessary procedures in forecasting with the Model. Second, we will present a forecast for 1973, the year following the statistical sample for our model estimation. This is an *ex post* forecast since we have actual values for certain exogenous variables, such as Soviet weather. Third, we will discuss the steps which are necessary to bring the model to the operational level and a tentative annual schedule for forecasting the Soviet economy, both short and medium term.

Forecasting Procedure: Short and Medium-Term

A short-term forecast for our model extends through the latest year for which we have annual plan and plan budget data. A medium-term forecast will extend from one to four years beyond the short-term forecast. Because of the absence of budgetary data (investment and defense) for medium-term forecasting, a different version of the model must be employed and additional assumptions must be made.

For short-term forecasting, the user will typically use the basic version of the model with budgetary plan figures for investment and defense. Over the forecast period, assumptions are then made for four groups of exogenous variables:

(1) Demographic variables
(2) World Trade variables
(3) Agricultural variables
(4) Short-term policy variables

Demographic variables include the size of the population and the able-bodied population; assumed values for these variables will be obtained from the projections made by the Department of Commerce (Foreign Demographic Analysis Division).

There are eight trade variables which play a role as exogenous variables in the foreign trade sector of our model. Four of these variables are world trade variables for which extrapolations are typically made in WEFA econometric analysis of world trade and the U.S. economy:

(1) P599, Import price deflator for manufactures, U.S.;
(2) PWT9, Price deflator for world trade;
(3) WTX9, Index of world trade in commodities in constant prices;
(4) YCMEA9, Index of Net Material Product in the CMEA, exluding the USSR.

The other four variables in this category are specific to the USSR and the user must consult experts on Soviet foreign trade in forecasting their future values:

(5) PREX9, Dollar/Ruble conversion ratio;
(6) KGOLD$9, Gold reserves of the USSR;
(7) PTM9, Official Soviet price index for imports;
(8) PTX9, Official Soviet price index for exports.

The third category of exogenous variables for short-term forecasting are agricultural variables. These include the two weather indexes used in the prediction of agricultural output and the level of sown acreage. Some long-range forecasts of Soviet weather are made in the Soviet Union and the

West; these may be used in setting the assumed values for summer-spring precipitation and winter temperature. Sown acreage is another variable for which expert opinion should be consulted; the Diamond-Krueger index has remained quite stable over the past five years but may soon rise with the recent Brezhnev emphasis upon land reclamation.

Finally, we may turn to the policy variables including tax and expenditure rates for budget categories and administrative reforms of prices and wages. In a "normal" forecasting year, the user may simply assume no exogenous shifts in policy instruments. However, the model has been constructed so that anticipated reforms may be incorporated in the forecasting procedure. Using official pronouncements on policy changes and price-wage reforms, one may introduce such instrument shifts through assumptions or adjustments before computing the forecast.

For medium-term forecasting, additional assumptions must be made about defense and investment expenditures over the forecast period. For defense, the user must specify both the official defense expenditure category and its distribution between personnel and nonpersonnel components. For investment in a medium-term forecast, one must supply sectoral investment levels for the six sectors of the capital stock: industry, agriculture, construction, transport and communications, housing, and services and trade. Assumptions for these variables may be constructed on the basis of five-year plans and the judgment of Western analysts.

Enough of the forecasting procedure has been described for the reader to recognize the importance of expert opinion in the preparation of a forecast with an econometric model. In forecasting experience for other economies, a crucial element is the interaction between expert judgment and the econometric model. The model builder may recognize when a component of his system has been predicting badly over the sample period; but he needs the assistance of expert observers in anticipating poor performance of a model component because of structural or policy shifts. On the other side, the model represents a valuable new tool for the expert since it captures, at least to some extent, the complex of interdependencies and enables him to evaluate the sensitivity of the observed economic system to judgmental variables.

An "Ex Post" Forecast for 1973

In Table 1 below, we have provided an "ex post" forecast for 1973 computed using the SRI-WEFA Econometric Model of the USSR. For selected categories of production and use, the Table includes actual values for 1971-72 and predicted values for 1972-73; also included is a growth rate for 1973 calculated from the predicted values for 1972-1973. Before commenting upon the details of the forecast, it is important for the procedure used to be understood. Among the assumptions which are made for the forecast are the actual values for Soviet weather and the annual plan figures for sectoral financing and defense. Because we do not have complete trade statistics for 1972, the model solution must begin in that year using actual historical data for 1971 and earlier. Consequently, the model prediction for 1973 is actually a two-year forecast; however, actual 1972 data were used in estimating all equations of the model except those in the trade sector.

There are no forecasting models for the Soviet economy to serve as benchmarks for evaluating the first applications of the SRI-WEFA Model. However, there do exist evaluations of Soviet performance in 1973; unfortunately, these tend to be either more aggregative than our model or much more disaggregative (commodity outputs in physical units). The evaluation produced by the U.S. Government provides the clearest standard for judging our model's forecast since the underlying data used and the level of disaggregation are quite similar. This evaluation is not a forecast since it rests upon fulfillment reports published early in 1974; the only actual 1973 values incorporated in our forecast are the weather variables. In Table 2, we have presented for comparative purposes those preliminary 1973 growth rates published by the U.S. Government. Because of different valuations and slightly different classifications, Table 2 does not provide an exact standard; however, we should be concerned with significant discrepancies.

In general, we are quite pleased with this initial forecasting effort the forecast is rather close to the U.S. evaluation, particularly on the production side For all sectors other than construction, we predict sectoral growth rates that are slightly below Washington's rates. The 9.1% growth rate in construction activity appears because of the large increase in forecasted investment in the construction industry (17.9%). On the use side, we predict more investment and less consumption than are indicated in the Washington figures. Our low forecasts for food and soft goods consumption reflect the agricultural constraint from 1972; this constraint was not so severe in 1973, primarily because of expanded imports from the West. The sharp rise of investment (9.2%) predicted by the model is generated by the inertia of Official defense expenditures and a predicted 12% rise in gross profits.

In the foreign trade sector, we predict a high growth rate for both exports (12.9%) and imports (20.0%) in 1973, but those predictions fall short of the preliminary growth rates for Soviet foreign trade. Our errors in terms of the levels are even greater; our predicted values for 1973 are 5 Billion U.S.$ below estimates of actual levels. Our model, not surprisingly, does not predict the effects of detente on Soviet trade in 1972 and 1973. In using the model to forecast Soviet trade, one will have to incorporate judgmental adjustments for several of the major categories in our system. We will also need to re-estimate this sector of the model using a dummy variable for detente; judgment of experts must then be enlisted in projecting the probable duration of this effect.

In the basic version of the model, one obtains predictions for both sector-of-origin GNP and end-use GNP, and, consequently, there is a simulation/forecast residual equal to the difference between the two. In the trial forecast, the model predicts a larger growth rate for sector-of-origin GNP (7.1%) than for end-use GNP (4.9%); there is a net change in the forecast residual of 8 billion 1970 rubles (from -2.6 to +5.4). As an alternative forecast, one may use the version where total consumption is the residual category. The only significant differences between the two forecasts are in consumption and its components are now much higher than the Washington estimates, particularly for food and soft goods We have more confidence in the Table 1 forecast for consumption though we do recognize the need for model development to allow imports to ease domestic supply constraints on food and soft goods.

TABLE 1

SRI-WEFA MODEL FORECAST FOR 1973

Indicator	Units	Actual 1971	Actual 1972	Prediction 1972	Prediction 1973	Predicted 1972 1973
Production						
GNP, Sector of Origin	B 1970 Rubles	375.4	386.7	384.3	411.4	7.1%
Gross Agricultural Output	B 1965 Rubles	71.5	66.4	65.2	75.0	15.0
Industrial Output	1970 = 100	106.0	112.0	112.1	117.9	5.2
State Construction Activity	B 1970 Rubles	47.6	50.8	50.6	55.2	9.1
Transport/Communication Output	1970 = 100	106.7	113.4	115.0	123.1	7.0
Government, Services, Domestic Trade	1970 = 100	104.0	107.9	104.9	108.5	3.3
Use						
Consumption — Total	B 1970 Rubles	219.3	227.5	224.3	229.1	2.1
Food	B 1970 Rubles	105.9	108.2	107.7	109.0	1.2
Softgoods	B 1970 Rubles	50.5	53.2	52.4	52.9	1.0
Durables	B 1970 Rubles	15.2	16.1	16.0	17.0	6.3
Services	B 1970 Rubles	47.7	50.0	48.2	50.3	4.4
New Investment -- Total	B 1970 Rubles	88.0	94.3	95.5	104.3	9.2
Agriculture	B 1970 Rubles	16.4	18.1	17.5	19.8	13.1
Industry	B 1970 Rubles	31.0	33.1	33.9	36.9	8.8
Construction	B 1970 Rubles	3.4	3.6	3.94	4.63	17.9
Transport/Communications	B 1970 Rubles	8.5	9.6	9.39	10.36	10.6
Housing	B 1970 Rubles	14.1	14.6	15.00	15.85	6.0
Services/Trade	B 1970 Rubles	14.6	15.2	15.72	16.79	7.0
Capital Repair	1970 = 100	108.1	113.5	115.5	123.3	6.8
Inventory Change - Domestic Trade	B 1970 Rubles	2.6	1.4	1.86	3.19	71.5
Nontrade, nonagriculture	B 1970 Rubles	10.1	10.1	8.38	8.25	-1.6
Total Imports	B Current U.S.$	12.5	16.11	13.49	16.20	20.0
Total Exports	B Current U.S.$	13.8	15.42	14.97	16.90	12.9
End-Use GNP	B 1970 Rubles	375.4	386.7	386.9	406.0	4.9
Forecast Residual	B 1970 Rubles	0	0	-2.6	5.4	--

TABLE 2

Preliminary Data on Soviet Economic Performance in 1973
(U.S. Government Figures)

Production (Growth Rates measured at Factor Cost)	1973 % Growth
GNP	7.5
Agriculture	16.8
Industry	6.2
Construction	2.2
Transport/Communications	7.3
Domestic Trade	5.4
Services	3.7
Use	
Consumption — Total	4.3
Food	4.6
Softgoods	4.6
Durables	3.3
Services	6.3
Total New Investment	3.5
Capital Repair	10.0
Civilian R. & D.	6.6
Administration	4.3

Foreign Trade	Actual Level (B U.S.$) 1972	1973	
Total Imports	16.10	20.98	30.4
Total Exports	15.41	21.33	38.4

Table 3

Consumption Forecast When Consumption
Is the Residual End-Use Category

	Predicted 1972	Predicted 1973	Predicted 1973 Growth Rate	Prediction From Table 1
Consumption -- Total	221.5	235.6	6.3	2.1
Food	106.3	112.1	5.4	1.2
Softgoods	51.1	54.8	7.2	1.0
Durables	15.8	17.1	8.2	6.3
Services	48.3	51.5	6.6	4.4

Towards Operational Forecasting

In the past year, we enlisted expert opinion early in our specification of the model; in the current year, we intend to involve experts actively in the use of the model for both scenario analysis and forecasting. During 1975, we will conduct forecasting trials with the compact five-sector model; this should provide considerable experience in forecasting the Soviet economy that may be transferred to the second-stage sixteen-sector model.

With the budget statement in December 1974, we will issue our first control forecast for 1974 and 1975. Early in 1975 we will convene a seminar of experts to evaluate the performance of the forecasting procedure for 1973 and 1974 and to consider appropriate adjustments for our 1975 forecast. In the Fall of 1975, we will issue a revised forecast for 1975 on the basis of additional information on world trade and Soviet weather and prepare for the December control forecast of 1976. This will set the general pattern for operational forecasting on an annual cycle:

(1) December-January, we issue a control forecast.

(2) Early in the year, a session with econometric and Soviet specialists held to evaluate past forecasts and the current control forecast.

(3) Then, an adjusted forecast will be issued in Spring with a possible revision in the fall.

In Fall 1975, we also anticipate preparing Model II with its Input-Output component for use in forecasting both short and medium term.

We will be experimenting with medium-term forecasts using the compact model in anticipation of the Tenth Five-Year-Plan for 1976-1980. We should then have enough experience to use the Model as an additional means for testing the feasibility of the Five-Year-Plan, as well as a tool for medium-term forecasting.

APPENDIX A

WHARTON ECONOMETRIC FORECASTING ASSOCIATES INC. WHARTON EFA

DOCUMENTATION FOR THE
SRI-WEFA
ECONOMETRIC MODEL OF THE SOVIET UNION

I. Sectors and Symbols

In its fully endogenous mode, the model consists of 81 stochastic (behavioral and technical, type B) relationships and 32 identities (type I) arranged in the sectors set out below. The sectors are identified by the letter shown; this is the initial symbol in the names of all variables determined in that sector, e.g. PII is a price variable (industrial investment deflator) determined in the P (price) sector.

SECTOR IDENTIFIER	SECTOR NAME	NO. OF RELATIONSHIPS B-type	I-type
N	Population and Employment	10	2
I	Investment	8	5
K	Capital Formation	7	8
A	Other Agricultural Variables	2	
X	Production	5	
W	Wages	5	
Z	Incomes	4	3
P	Prices	11	2
C	Consumption	4	1
T	Budget Revenues	5	2
B	Budget Outlays	6	1
E	Exports	5	2
M	Imports	7	2
G	Aggregate Identities and Balances	2	4
	TOTAL	81	32

II. Simulation

The model is encoded into a simulation program using the WEFA general model solution system SOLVEM.* This program has standard facilities to convert the status of any variable (e.g. from endogenous to exogenous) and to apply additive adjustments to any variable. In addition it has facility to change the status of BLOCKS of the model which has been utilized in the following way.

BLOCK NO.	DESCRIPTION	CONSISTING OF SECTORS
1	Foreign Trade	E, M
2	Supply	N, K, A, X
3	Incomes	W, Z, P
4	Investment	I (excl. I.10-I.13)
5	Consumption	C
6	Budget	T, B
7	Aggregates	G (plus I.10-I.13)

Block 2 is, of course, the central and largest one within which most of the simultaneity is to be found.

An example of the application of the BLOCK facility would be to change the status of BLOCK 4 (investment) from endogenous to exogenous.

A further facility to utilize different alternatives for a particular equation or set of equations, and thus produce different variants of the model, has been employed as follows (ZERO is the initial default option).

---

* We are indebted to George Schink and Bill Brown, the developers of SOLVEM, for guidance in using it for this model.

ALTERNATE SWITCH NO.	SETTING	ALTERNATIVE	EQUATION NUMBERS
1	ZERO	Non-agricultural investment by adding components	I.1a-6a
	ONE	Non-agricultural investment by direct function (components by exogenous ratios)	I.1b-6b
2	ZERO	Industrial output from Cobb-Douglas	X.1a
	ONE	Industrial output from C.E.S.	X.1b
3	ZERO	Consumption components by direct functions	C.2a-C.5a
	ONE	Consumption components by supply functions	C.2c-C.5c
	TWO	Consumption components by share functions	C.2b-C.5b
4	ZERO	Total consumption by adding components	C.1b
	ONE	Total consumption by direct function	C.1a
	TWO	Total consumption by supply function	C.1d
	THREE	Total consumption by residual function	C.1d

Except in the form in which total consumption is residually determined (Alt. 4=THREE), GNP is determined both from the side of production (equ. G.3) and from the side of use (by adding components). The difference is a simulation residual defined in equation G.6.

III. Variables

Variables in the model are contained in the attached alphabetical list; there are 113 endogenous and 65 exogenous variables.

The following naming conventions have beem employed.*

SYMBOL		CONVENTION
Initial Symbol		
Sector symbols		Sector of model (see above list) in which endogenous variable is determined
Q		Dummy or time trend variables (figures following generally denote year(s), e.g. Q65 is a dummy variable for 1965)
Final Symbol		
9		Exogenous variable other than Q-type
Embedded or Trailing Symbols		
Industries	I	industry
	C	construction
	T	transport and communications
	G	government, trade, services, etc.
	A	agriculture
Other	&	current ruble value (always used)
	70	1970 price base (not always used)

NOTE: A variable is exogenous if and only if it ends in 9 or begins with Q; a variable is at current ruble value if and only if it has a &-sign in its name.

Data file management programs developed at WEFA were used to construct, maintain and utilize a databank for the model.** The structure of the list of variables is largely self-explanatory. Variable # refers to the number of the variable in the model (simulation program) which generally differs from the number on the data-

* The reader is urged to study these conventions prior to consulting the equations of the model as an understanding of them will greatly facilitate that process.

** We are indebted to Virginia Long for assistance in setting up up these programs for our purposes.

bank. The set of model variables is a subset of the complete databank; a list for the latter is given separately in Appendix B.

ALPHABETICAL LISTING OF MODEL VARIABLES

D O C U M E N T A T I O N

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VARN	EQUN
67	PACI	INDEX OF AGRICULTURAL INPUTS, CURRENT PURCHASES			67	1965=100.	TRAN	115R	A.2
560	PLVR	VALUE OF PRODUCTIVE LIVESTOCK, (MEAN YEAR 1955 PRICES)			560	B RUBLES	DIAMOND	113R	A.1
362	[illegible]	STATE BUDGET EXPENDITURES, ADMINISTRATION			362	B CUR R	NKHOZ	153R	R.4
361	[illegible]	STATE BUDGET EXPENDITURES, DEFENSE			361	B CUR R	NKHOZ	152E	
568	[illegible]	DEFENSE [illegible] EXPENDITURES (CURRENT PRICES)			568	B RUBLES	COHN73	123E	
359	[illegible]	STATE BUDGET EXPENDITURES, FINANCING THE NATIONAL ECONOMY, TOTAL			359	B CUR R	NKHOZ	150R	R.1
358	[illegible]	STATE BUDGET EXPENDITURES, GOVT SPENDING, NATL ACCOUNTS BASIS			358	B CUR R	NKHOZ	149I	R.6
563	[illegible]NAUKA	SCIENCE EXPENDITURES, USSR BUDGET (CURRENT PRICES)			563	B RUBLES	COHN73	154R	R.3
188	[illegible]	TRANSFER PAYMENTS (1973 FIGURES)			188	B R	73JEC393	107R	R.7
613	[illegible]	STATE BUDGET EXPENDITURE RESIDUAL			613	B RUBLES	NKHOZ	155R	R.5
360	[illegible]	STATE BUDGET EXPENDITURES, SOCIAL CULTURAL MEASURES			360	B CUR R	NKHOZ	151R	R.2
415	[illegible]	CONSUMPTION, GNP BASIS, TOTAL			415	B 1970R	TRAN	134I	C.1
413	[illegible]	CONSUMPTION, GNP BASIS, CONSUMER DURABLES			413	B 1970R	TRAN	132B	C.4
411	[illegible]	CONSUMPTION, GNP BASIS, FOOD			411	B 1970R	TRAN	130B	C.2
412	[illegible]	CONSUMPTION, GNP BASIS, SOFT GOODS			412	B 1970R	TRAN	131R	C.3
414	[illegible]	CONSUMPTION, GNP BASIS, SERVICES			414	B 1970R	TRAN	133R	C.5
105	[illegible]	EXPORTS, CEMA, FOOD			105	MSUS	73JEC706	002R	E.1
130	[illegible]	EXPORTS, CEMA OTHER (EX.FOOD)			130		TRAN	003B	E.2
114	[illegible]	EXPORTS, DEVELOPED WEST, TOTAL			114		73JEC706	9B	E.4
128	[illegible]	EXPORTS, LDCS AND UNSPECIFIED, TOTAL			128		TRAN	12B	E.5
127	[illegible]	EXPORTS, CHINA AND OTHER NON-CEMA COMMUNIST, TOTAL			127		TRAN	005B	E.3
97	[illegible]	EXPORTS, WORLD, TOTAL			97		73JEC706	14I	E.6
385	[illegible]	EXPORTS, WORLD, TOTAL, DOMESTIC 1970 PRICES			385	M 1970 R	TRAN	16I	E.7
595	[illegible]	GNP [illegible] INVESTMENT : CAPITAL REPAIR			595	1970=100.	OER73	114B	G.4
589	GNP	GNP AT ESTABLISHED PRICES (1970 OER MOVED)			589	B RUBLES	TRAN	025I	G.3
587	[illegible]	GNP AT ESTABLISHED PRICES, AGRICULTURAL (1970 OER MOVED)			587	B RUBLES	TRAN	22R	G.2
404	[illegible]	ESTABLISHED PRICES, GOVT GOVERNMENT, TRADE, SERVICES, ETC			404	1970=100	TRAN	079R	X.4
551	[illegible]	[illegible] GNP [illegible] (1970 WEIGHTS)			551	B RUBLES	OER73	068I	G.1
602	[illegible]	GNP + IMPORTS - EXPORTS LESS SUM OF END USES			602	B RUBLES	TRAN	178I	G.5
647	[illegible]	[illegible] TO USE AS ACTUAL VALUES FOR SIMULATION RESIDUAL			647	NONE	NONE	179I	G.6
349	IA	CAPITAL INVESTMENT IN AGRICULTURE 72R			349	B 1972R	TRAN	111R	I.7
262	[illegible]	CAPITAL INVESTMENT IN CONSTRUCTION			262	B RUBLES	NARKHOZ	070R	I.2
463	[illegible]	LOG TIME TREND 1923=0			463	NONE	TRAN	049E	
382	[illegible]	TIME VARIABLE WITH 1950=1 AND 1973=24			382	NONE	NONE	055E	
580	[illegible]	[illegible] INDUSTRY AND CONSTRUCTION			580	B RUBLES	TRAN	122I	I.8
344	[illegible]	RESIDENTIAL AND COOPERATIVE HOUSING			344	B CUR R	CUR DIG	121E	
335	[illegible]	INDUSTRY AND CONSTRUCTION			335	B CUR R	CUR DIG	11PE	
343	[illegible]	SOCIAL AND CULTURAL MEASURES			343	B CUR R	CUR DIG	120E	
338	[illegible]	TRANSPORTATION AND COMMUNICATION			338	B CUR R	CUR DIG	119E	
428	IHS	INVESTMENT IN HOUSING, ADJ TO 1970 PRICES			428	B RUBLES	NARKHOZ	083B	I.4
347	[illegible]	CAPITAL INVESTMENT IN INDUSTRY 72R			347	B 72R	NARKHOZ	064B	I.1
583	[illegible]	INVESTMENT [illegible] NONAGRICULTURAL			583	B RUBLES	TRAN	037I	I.6
461	[illegible]	PERCENTAGE NONAGRICULTURAL INVESTMENT, CONSTRUCTION			461	NONE	TRAN	092I	
643	[illegible]	PERCENTAGE NONAGRIC INVESTMENT, HOUSING			643	NONE	TRAN	051E	
479	[illegible]	PERCENTAGE NONAGRICULTURAL INVESTMENT, INDUSTRY			479	NONE	TRAN	091I	
644	[illegible]	PERCENTAGE NONAGRICULTURAL INVESTMENT, SERVICES			644	NONE	TRAN	117E	
371	ISER	CAPITAL INVESTMENT IN SERVICES 72R			371	B RUBLES	NARKHOZ	086B	I.5
544	ISTNNTA	INVENTORY STOCK, END YEAR AT 1970 PRICES, NON-TRADE, NON-AGRIC			544	B 1970 R	TRAN	174I	I.13
541	ISTDT	INVENTORY STOCK, END YEAR AT 1970 PRICES, DOMESTIC TRADE			541	B 1970 R	TRAN	173I	I.12
470	ITOTAL	INVESTMENT, NATIONAL ECONOMY			470	B RUBLES	TRAN	093I	I.9

DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VARS	EQUN
259	ITRUN	CAPITAL INVESTMENT IN TRANS & COMMUN			259	B RUBLES	NARKHOZ	078B	I.3
546	I70NTA	CHANGE IN INV. STOCK,END YEAR AT 1970 PRICES,NON-TRADE NON-AGRIC			546	B 1970 R	TRAN	172B	I.11
545	I70T	CHANGE IN INV. STOCK,END YEAR AT 1970 PRICES,DOMESTIC TRADE			545	B 1970 R	TRAN	171B	I.10
435	JPS9	SUM OF DEVIATIONS FROM MONTHLY PRECIPITATION VALUES			435	CM	IMS	102E	
611	JTK9	WEATHER INDEX, WINTER TEMP INDEX FOR SOUTHERN UKRAINE			611	NONE	D-G	104E	
592	KAIF	AGRICULTURAL FIXED CAPITAL (MEAN YEAR 1955 PRICES)			582	B RUBLES	DIAMOND	110B	K.14
484	KCN	BASIC FUNDS, CONSTRUCTION (JAN 1, 1955 PRICES)			484	B RUBLES	TRAN	068I	K.4
152	KGOLD39	GOLD RESERVES,USSR			152	MSUS	73JEC702	24E	
509	KHA	ADJUSTED BASIC FUNDS, HOUSING (JAN 1, 1955 PRICES)			509	B RUBLES	TRAN	080I	K.11
427	KHF	BASIC FUNDS IN HOUSING (JAN 1, 1955 PRICES)			427	B RUBLES	NARKHOZ	081I	K.10
355	KHR9	HOUSING STOCK RURAL			355	M SQ MET	73JEC422	031E	
353	KHU9	HOUSING STOCK URBAN			353	M SQ MET	73JEC422	030E	
507	KIA	ADJUSTED BASIC FUNDS,INDUSTRY JAN 1,1955 PRICES			507	B RUBLES	TRAN	060I	K.2
506	KIH629	BASIC FUNDS ADJUSTMENT FOR 1962I-H TRANSFER OF HOUSING CAPITAL			506	B RUBLES	TRAN	066E	
169	KITOT	CAPITAL STOCK, TOTAL INDUSTRY			169	B 1955R	COHN70	061I	K.1
505	KIT589	BASIC FUNDS ADJUSTMENT FOR 1958 I-T TRANSFER OF RR CAPITAL (AT DEC 31)			505	B RUBLES	TRAN	065E	
514	KNDC	NET CHANGE IN BASIC FUNDS, CONSTRUCTION			514	B RUBLES	TRAN	069B	K.5
516	KNDH	NET CHANGE IN BASIC FUNDS,HOUSING			516	B RUBLES	TRAN	082B	K.13
511	KNDI	NET CHANGE IN BASIC FUNDS, INDUSTRY			511	B RUBLES	TRAN	062B	K.3
515	KNDS	NET CHANGE IN BASIC FUNDS, TRADE AND SERVICES			515	B RUBLES	TRAN	085B	K.12
513	KNDT	NET CHANGE IN BASIC FUNDS, TRANS & COMMUN			513	B RUBLES	TRAN	077B	K.8
547	KST	BASIC FUNDS IN SERVICES AND TRADE (JAN 1 ,1955 PRICES)			547	B RUBLES	TRAN	087I	K.9
508	KTA	ADJUSTED BASIC FUNDS, TRANSPORT AND COMMUNICATION (JAN 1,1955 PRICES)			508	B RUBLES	TRAN	074I	K.7
423	KTCUS	RAILROAD CAR UTILIZATION, AVE 24HR DISTANCE PER FREIGHT CAR			423	KMS/24HR	SVYAZ103	073B	K.15
483	KTC	BASIC FUNDS, TRANS & COMM JAN 1,1955 PRICES			483	B RUBLES	TRAN	076I	K.6
441	[illegible]	PERCENT OF MEAT LIVESTOCK BEING FATTENED & YOUNG LIVESTOCK			441	PERCENT	NARKHOZ	140E	
106	MFTS	IMPORTS, [illegible] TOTAL			106	MSUS	73JEC706	001B	M.1
141	[illegible]	IMPORTS, DEVELOPED WEST, MACHINERY AND MANUFACTURE			141		TRAN	7B	M.4
136	[illegible]	IMPORTS, DEVELOPED WEST, OTHER (EX.WHEAT,MACHINERY AND MANUFACT.)			138		TRAN	8B	M.5
119	[illegible]	IMPORTS, DEVELOPED WEST, CONSUMER GOODS, WHEAT AND WHEAT FLOUR			119		73JEC706	006B	M.3
123	MLFS	IMPORTS, LDC'S, CONSUMER GOODS, FOOD			123		73JEC706	10B	M.6
139	MLOOS	IMPORTS, LDC'S AND UNSPECIFIED, OTHER (EX.FOOD)			139		TRAN	11B	M.7
133	[illegible]	IMPORTS, CHINA AND OTHER NON-CMEA COMMUNIST, TOTAL			133		TRAN	004B	M.2
99	[illegible]	IMPORTS, WORLD, TOTAL			99		73JEC706	13I	M.8
366	[illegible]170	IMPORTS, WORLD, TOTAL, DOMESTIC 1970 PRICES			386	M 1970 R	TRAN	15I	M.9
517	NASC	EMPLOYMENT, AGRICULTURE, STATE AND COLLECTIVE FARMS.			517	000 PERS	TRAN	036B	N.8
52	NC	EMPLOYMENT, CONSTRUCTION			52	000 PERS	73JEC50A	043B	N.5
646	[illegible]	HIGHER ED. ... ALL INDUSTRIAL CATEGORIES			646	(000)	NKHOZ	177E	
639	[illegible]	HIGH.ED. ... TRANSPORT			639	(000)	NKHOZ	176E	
64	NG	EMPLOYMENT, GOVERNMENT,TRADE,SERVICES,ETC			64	000 PERS	TRAN	042B	N.7
62	NI	EMPLOYMENT, INDUSTRIAL			62	000 PERS	TRAN	040B	N.4
390	NIET	ENGINEERING-TECHNICAL WORKERS IN INDUSTRY			390	000 MEN	NARKHOZ	058B	N.11
548	NNAS	EMPLOYMENT, NON AGRIC, NON ARTISAN			548	000 PERS	TRAN	089B	N.3
279	NPAB9	POPULATION, ABLE BODIED AGES (16-59/54)			279	000 PERS	73JEC520	090E	
356	NPOPR	POPULATION, RURAL (END YEAR)			356	M PERS	NKH 72.7	029I	N.2
354	NPOPU	POPULATION, URBAN (END YEAR)			354	M PERS	NKH 72.7	02AB	N.1
466	NPOP9	POPULATION, TOTAL			466	M	TRAN	092E	
63	NT	EMPLOYMENT, TRANSPORTATION			63	000PERS	TRAN	041B	N.6
285	NTA	EMPLOYMENT, AGRICULTURAL SECTORS			285	000 PERS	73JEC520	047I	N.10
267	NTAP	EMPLOYMENT, AGRICULTURAL SECTORS PRIVATE			287	000 PERS	73JEC520	030B	N.9

ALPHABETICAL LISTING OF MODEL VARIABLES

DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VARN	EQUN
424	NTSP	NUMBER OF TRANS & COMM SPECIALISTS, END OF YEAR			424	000 MEN	SVYAZ36	075B	N.12
388	PAFC70	PRICE FOOD SOLD TO CONSUMER CO-OPS AT NEGOTIATED PRICES, 1970 WEIGHTS			388	1970=100.	NKH+TRN	059B	P.3
418	PFCC	CONSUMPTION PRICE, FOOD (FROM PIRF & PAFC70)			418	1970=100	TRAN	129I	P.4
407	PIA	INVESTMENT DEFLATOR, AGRICULTURE			407	1972=100.	NARKHOZ	97B	P.13
405	PIC	INVESTMENT DEFLATOR, CONSTRUCTION SECTOR			405	1972=1009	NARKHOZ	101B	P.9
429	PIHS	INVESTMENT DEFLATOR, HOUSING			429	1972=100.	NARKHOZ	100B	P.12
406	PII	INVESTMENT DEFLATOR, INDUSTRY			406	1972=100.	NARKHOZ	095B	P.8
573	PIRF70	INDEX OF STATE RETAIL PRICES FOR FOOD GOODS (DEFLATED)			573	1970=100	TRAN	126B	P.2
409	PIS	INVESTMENT DEFLATOR, SERVICES			409	1972=100.	NARKHOZ	99B	P.11
408	PIT	INVESTMENT DEFLATOR, TRANSPORT AND COMMUNICATION			408	1972=100.	NARKHOZ	98B	P.10
549	PIWH70	INDEX OF WHOLESALE INDUSTRIAL PRICES, HEAVY INDUSTRY (DEFLATED)			549	1970=100.	TRAN	094B	P.7
575	PIWL70	INDEX OF WHOLESALE INDUSTRIAL PRICES LIGHT AND FOOD INDUSTRY (DEFLATED			575	1970=100	TRAN	128B	P.6
416	PNF70	CONSUMPTION PRICE, NON-FOOD (FROM PIRNF)			416	1970=100	TRAN	127B	P.1
419	PPC	CONSUMPTION PRICE, TOTAL (FROM PNF&PFCC)			419	1970=100.	TRAN	053I	P.5
612	RREX9	US$ RUBLE CONVERSION RATIO			612	B RUBLES	NKHOZ	19E	
376	PTM9	SOVIET TRADE WITH WORLD, IMPORTS, OFFICAL PRICE INDEX			376	1970=100.	VH TOR	H 026E	
375	PTX9	SOVIET TRADE WITH WORLD, EXPORTS, OFFICAL PRICE INDEX			375	1970=100.	VH TOR	H 027E	
570	PWT9	DEFLATOR WORLD TRADE			570	1958=100	INDEX	WEFA1AE	
439	PXCON9	PRICE DEFLATOR, CONSTRUCTION ACTIVITY			439	1972=100.	NARKHOZ	096E	
571	P599	IMPORTS, PRICE DEFLATOR, MANUFALTURED GOODS			571	1958=100	INDEX	WEFA17E	
432	DFL5	FIVE YEAR PLAN DUMMY (54-57,63-66,69-71,74-76)			432	NONE	D-G	071E	
433	DFL7	FIVE YEAR PLAN DUMMY (1954-57, 62-64, 69-71,74-76)			433	NONE	D-G	063E	
550	DSH65	DUMMY VARIABLE FOR 1954-1964 (PRIVATE AGRICULTURAL EMPLOYMENT)			550	NONE	C-H	108E	
581	DSH68	SHIFT VARIABLE FOR 1968 ON =1			581	NONE	D-G	125E	
604	DWREF	DUMMY VARIABLE FOR 1967-1969 (WAGE REFORM)			604	NONE	C-H	109E	
562	D55	DUMMY VARIABLE FOR 1955			562	NONE	NONE	175E	
622	D5859	DUMMY VARIABLE FOR 1958-59			622	NONE	NONE	163E	
620	D5861	DUMMY VARIABLE FOR 1958-61			620	NONE	NONE	161E	
619	D59	DUMMY VARIABLE FOR 1959			619	NONE	NONE	160E	
603	D61	DUMMY VARIABLE FOR 1961			603	NONE	NONE	139E	
468	D62	DUMMY VARIABLE FOR 1962			468	NONE	NONE	084E	
621	D6265	DUMMY VARIABLE FOR 1962-65			621	NONE	NONE	162E	
626	D63	DUMMY VARIABLE FOR 1963			626	NONE	NONE	167E	
642	D6368	DUMMY VARIABLE FOR 1963-68			642	NONE	NONE	169E	
623	D6467	DUMMY VARIABLE FOR 1964-67			623	NONE	NONE	164E	
485	D65	DUMMY VARIABLE FOR 1965			485	NONE	NONE	056E	
648	D6567	DUMMY VARIABLE FOR 1965-1967			648	NONE	NONE	181E	
577	D67	DUMMY VARIABLE FOR 1967			577	NONE	NONE	141E	
624	D6768	DUMMY VARIABLE FOR 1967-68			624	NONE	NONE	165E	
520	D68	DUMMY VARIABLE FOR 1968, INDUSTRY WAGE			520	NONE	TRAN	054E	
645	D69ON	DUMMY VARIABLE FOR 1969 ON			645	NONE	NONE	180E	
625	D70	DUMMY VARIABLE FOR 1970			625	NONE	NONE	166E	
480	IRIT9	PERCENTAGE, NON AGRICULTURAL INVESTMENT, TRANSPORT AND COMMUNICATION			480	NONE	TRAN	048E	
614	RTPP9	TAX RATE PROFITS			614	NONE	NONE	148E	
618	RTSD9	TAX RATE, ADJUSTMENT, SOCIAL DEDUCTIONS			618	NONE	NONE	158E	
576	RTTP9	DEVIATIONS FROM PLAN OF RTT			576	%	TRAN	137E	
616	RTOS9	TAX RATE, ADJUSTMENT, OTHER SOCIAL SECTOR			616	NONE	NONE	157E	
617	RTTP9	TAX RATE, ADJUSTMENT, POPULATION			617	NONE	NONE	159E	
615	RTTT9	TAX RATE, ADJUSTMENT, TURNOVER TAX			615	NONE	NONE	156E	
434	SAI9	INDEX OF AGRICULTURAL INPUTS, SOWN AREA			434	1965=100.		170E	

ALPHABETICAL LISTING OF MODEL VARIABLES

D O C U M E N T A T I O N

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
451	TDER	REVENUES, DEDUCTIONS FROM PROFIT, STATE ENTERPRISES			451	B RUBLES	NKHOZ	144B	T.1
506	TOSSR	REVENUES , OTHER SOCIAL SECTORS			506	B RUBLES	PRAVDA	145B	T.3
189	TPR	TOTAL STATE DEDUCTIONS (1973 FIGURES)			189	B RUBLES	73JEC393	138I	T.6
641	TRAR9	ADJUSTMENT FOR LOCAL TAXES,ADMISSION FEES, AND LOTTERIES			641	B RUBLES	73JEC	160E	
453	TPOPR	REVENUES, POPULATION (INCOME TAXES, STATE BONDS, LOTTERIES ETC)			453	B RUBLES	NKHOZ	147B	T.5
449	TRX	STATE BUDGET, TOTAL REVENUES (CURRENT RUBLES)			449	B RUBLES	NKHOZ	142I	T.7
454	TSDR	REVENUES , SOCIAL INSURANCE DEDUCTIONS			454	B RUBLES	NKHOZ	146B	T.4
450	TTR	REVENUES, TURNOVER TAX			450	B RUBLES	NKHOZ	143R	T.2
519	WASCR	WAGES,AGRICULTURE, STATE AND COLLECTIVE FARMS			519	RUBLES	TRAN	033R	W.2
265	WCR	WAGES, CONSTRUCTION			265	RUBLES	70JEC82	046R	W.3
401	WGR	WAGES, GOVERNMENT,TRADE,SERVICES ECT.			401	RUBLES	TRAN	045B	W.5
264	WIR	WAGES, INDUSTRY			264	RUBLES	70JEC82	032B	W.1
400	WTR	WAGES, TRANSPORTATION AND COMMUN			400	RUBLES	TRAN	044B	W.4
143	WTX9	WORLD TRADE VOLUME			143	1958=100	WEFANEW	23E	
252	XACTUAL9	VALUE OF FEED FED TO LIVESTOCK			252	M1968R	SRI	116E	
503	XATOT	AGRICULTURAL PRODUCTION TOTAL			503	M RUBLES	OER	112B	X.5
383	XATR9	AGRICULTURAL PRODUCTION, TREND 1955-1972			383	M RUBLES	TRAN	21E	
243	XCRUR	CONSTRUCTION ACTIVITY			243	B RUBLES	NARKHOZ	067R	X.2
296	XITOT	INDUSTRIAL OUTPUT INDEX, TOTAL			296	1970=100.	OER73	057B	X.1
380	XT7R	TRANS-COMM INDEX, 1970 WEIGHTS, RUBLE SERIES FOR COMM			380	1970=100	D-G	072R	X.3
148	YCNFA9	NET MATERIAL PRODUCT IN CONSTANT PRICES, CMEA			148	1963=100.	44UNCTAD	20E	
605	ZD	REAL HOUSEHOLD DISPOSABLE INCOME			605	B RUBLES	TRAN	136I	Z.6
181	ZFZ	TOTAL MONEY INCOME (1973 FIGURES)			181	B RUBLES	73JEC393	039I	Z.4
579	[illegible]	HOUSEHOLD AGRICULTURAL INCOME IN KIND			579	B RUBLES	RAND/TRA	135R	Z.5
461	ZPCR	ACTUAL GROSS PROFITS, NATIONAL ECONOMY			461	B RUBLES	NKHOZ	124R	Z.7
186	[illegible]	PROFITS DISTRIBUTED TO COOPERATIVE MEMBERS (1973 FIGURES)			186	B R	73JEC393	105E	
183	[illegible]	GROSS EARNINGS COOPERATIVE ARTISANS (1973 FIGURES)			183	B R	73JEC393	103F	
187	ZPWMA	MILITARY PAY AND ALLOWANCES (1973 FIGURES)			187	B R	73JEC393	106E	
185	ZPWSR	NET HOUSEHOLD INCOME FROM SALE OF FARM PRODUCTS (1973 FIGURE)			185	B RUBLES	73JEC393	035R	Z.3
518	ZPWSCR	WAGE PAYMENTS AGRICULTURE, STATE AND COLLECTIVE FARMS			518	B RUBLES	TRAN	034I	Z.2
465	ZWUR	GROSS EARNINGS URBAN WORKERS			465	B RUBLES	TRAN	050B	Z.1

IV. Equations

Equations are arranged by sector in the sector-order given above. Behavioral equations are written in the form used for estimation with the sample mean value of the dependent variable shown in parentheses beneath it. In some cases auxiliary variables have been defined below the equation in which they appear. Such auxiliary variables serve only this presentation purpose and do not have model variable numbers.

Figures in parentheses under coefficients are t-statistics; absence thereof implies extraneous estimate. R^2 is the multiple correlation coefficient (unadjusted for degrees of freedom); S.E. is the standard error of estimate and D.W. the Durbin-Watson statistic; D is the normal variate devised by Durbin to test for first order serial correlation in the presence of a lagged dependent variable.

Final equations were estimated by ordinary least squares using T.S.P. (Time Series Processor).*

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* We are indebted to Jean-Pierre LeMaitre for assistance in adapting this program to our data files.

N POPULATION AND EMPLOYMENT

(N.1) NPOPU Urban Population

$$\underset{(54.1)}{\frac{100\ NPOPU}{NPOP9}} = \underset{(20.79)}{36.06531}\ QLT28 + \underset{(1.53)}{0.11493}\left(100\ \frac{KHU9/NPOPU}{KHR9/NPOPR}\right)_{-2}$$

$$+ \underset{(4.32)}{0.01447}\left(\frac{100\ WI\&}{(ZPWSC\&+ZPWS\&)\,10.^{6}/(NASC+NTAP)}\right)_{-2}$$

$$- \underset{(7.63)}{93.27110} - \underset{(1.08)}{0.97486}\left(\frac{XATOT/1000}{XATR9} - 1\right)_{-1}$$

$R^2 = .998$ S.E. = 0.137 D.W. = 1.83
Sample Period 1960-1972

(N.2) NPOPR Rural Population

$$NPOPR = NPOP9 - NPOPU$$

(N.3) NNAS Non-agricultural, Non-artisan Employment

$$\underset{(559.0)}{\frac{NNAS}{NPOPU+NPOPU_{-1}}} = \underset{(18.83)}{5.68721}\ QT50 + \underset{(0.50)}{0.04875}\ \frac{NPAB9}{NPOP9}$$

$$+ \underset{(7.93)}{420.11182}\ \frac{WI\&/PRC}{(WI\&/PRC)_{-1}} + \underset{(4.00)}{8.88542}\ QPL7$$

$R^2 = .985$ S.E. = 3.761 D.W. = 1.99
Sample Period 1959-1972

(N.4) NI Industrial Employment

$$\underset{(40.6)}{\frac{100\ NI}{NNAS}} = - \underset{(1.20)}{2.17066}\ QLT28 - \underset{(0.54)}{0.07047}\ QPL7 - \underset{(2.39)}{0.22100}\ IRII_{-1}$$

$$- \underset{(4.46)}{1.29640}\ IRIC_{-1} + \underset{(19.69)}{62.67984}$$

$R^2 = .968$ S.E. = 0.225 D.W. = 1.59
Sample Period 1959-1972

(N.5) NC Construction Employment

$$\frac{100\ NC}{NNAS} = -\underset{(4.36)}{5.84034}\ QLT28 - \underset{(0.96)}{0.09236}\ QPL7 + \underset{(2.00)}{0.13683}\ IRII_{-1}$$

$$(11.0) \qquad + \underset{(6.06)}{1.30053}\ IRIC_{-1} + \underset{(9.27)}{21.80510}$$

$R^2 = .857$ S.E. = 0.167 D.W. = 2.30
Sample Period 1959-1972

(N.6) NT Transport and Communcations Employment

$$\frac{100\ NT}{NNAS} = -\underset{(8.53)}{6.19842}\ QLT28 + \underset{(1.31)}{0.06844}\ QPL7 + \underset{(2.73)}{0.10121}\ IRII_{-1}$$

$$(12.0) \qquad + \underset{(2.60)}{0.30293}\ IRIC_{-1} + \underset{(22.84)}{29.16995}$$

$R^2 = .975$ S.E. = 0.090 D.W. = 1.34
Sample Period 1959-1972

(N.7) NG Government, Trade, Services, etc., Employment

$$\frac{100\ NG}{NNAS} = \underset{(19.37)}{14.20937}\ QLT28 + \underset{(1.79)}{0.09439}\ QPL7 - \underset{(0.45)}{0.01705}\ IRII_{-1}$$

$$(36.35) \qquad - \underset{(2.61)}{0.30704}\ IRIC_{-1} - \underset{(10.59)}{13.65457}$$

$R^2 = .997$ S.E. = 0.091 D.W. = 1.68
Sample Period 1959-1972

Equations N.4 - N.7 identically exhaust NNAS from N.3

(N.8) NASC State and Collective Farm Employment

$$\frac{NASC}{1000\ NPOPR} = \underset{(13.34)}{0.91779} \left(\frac{NASC}{1000\ NPOPR}\right)_{-1} + \underset{(1.10)}{0.01993} + \underset{(0.94)}{0.00002771}\ JPS9$$

(0.262)

$$- \underset{(1.56)}{0.01885} \left\{\left(\frac{XATOT/1000}{XATR9} - 1\right)_{-1} + \left(\frac{XATOT/1000}{XATR9} - 1\right)_{-2}\right\}$$

R^2 = .931 S.E. = 0.004 D.W. = 2.00
Sample Period 1955-1972 D. = 0.00

(N.9) NTAP Private Agricultural Employment

$$\frac{NTAP}{NASC} = - \underset{(9.01)}{0.03787}\ QSH65 + \underset{(137.99)}{0.43421}$$

(0.413)

$$- \underset{(1.54)}{0.04014} \left\{\left(\frac{XATOT/1000}{XATR9} - 1\right)_{-1} + \left(\frac{XATOT/1000}{XATR9} - 1\right)_{-2}\right\}$$

R^2 = .846 S.E. = 0.009 D.W. = 1.81
Sample Period 1955-1972

(N.10) NTA Total Agricultural Employment

NTA = NASC + NTAP

(N.11) NIET Engineering-Technical Manpower Employed in Industry

$$NIET - NIET_{-1} = \underset{(14.94)}{0.16902} \left(\frac{NEIND9_{-1} + NEIND9_{-2}}{2.}\right) - \underset{(5.22)}{160.54225}\ Q69ON$$

(138.27)

$$+ \underset{(1.47)}{288.97363} \left(\frac{(NIET_{-1} - NIET_{-2})*2.}{NEIND9_{-1} + NEIND9_{-2}} - 0.13589\right)$$

R^2 = 0.798 S.E. = 30.82 D.W. = 1.91
Sample Period 1958-1972

(N.12) NTSP Specialists Employed in Transport and Communications

$$NTSP-NTSP_{-1} = \underset{(36.26)}{0.47175}\left(\frac{NETRA9_{-1}+NETRA9_{-2}}{2.}\right)$$

(41.70)

$$+\ 42.85957\left(\frac{(NTSP_{-1}-NTSP_{-2})*2.}{NETRA9_{-1}+NETRA9_{-2}} - 0.49761\right)$$

$R^2 = 0.836$ S.E. = 4.54 D.W. = 2.24

Sample Period 1958-1972

I INVESTMENT

(I.1) IIN Capital Investment in Industry

a.

$$\underset{(0.076)}{\frac{IIN-IIN_{-1}}{IIN_{-1}}} = \underset{(5.01)}{0.06745} - \underset{(3.41)}{0.05765}\ Q6567 - \underset{(3.97)}{0.19528}\ GDF$$

$$+ \underset{(1.28)}{0.18985} \left(\frac{IFAJ\&/PII_{-1} - IFAJ\&_{-1}/PII_{-2}}{IFAJ\&_{-1}/PII_{-2}}\right)$$

$$+ \underset{(2.63)}{0.18025} \left(\frac{ZPG\&/PII_{-1} - ZPG\&_{-1}/PII_{-2}}{ZPG\&_{-1}/PII_{-2}}\right)$$

$R^2 = 0.751$ S.E. = 0.022 D.W. = 2.31
Sample Period 1959-1972

$$\text{Where}\quad GDF = \frac{BDNP\&9/PIWH70 - (BDNP\&9/PIWH70)_{-1}}{(BDNP\&9/PIWH70)_{-1}}$$

b. $IIN \equiv IRII9.INA$

(I.2) ICRUB Capital Investment in Construction

a.

$$\underset{(0.102)}{\frac{ICRUB-ICRUB_{-1}}{ICRUB_{-1}}} = -\underset{(1.93)}{0.06576}\ QPL7 + \underset{(2.44)}{0.00514}\ QT50$$

$$+ \underset{(0.48)}{0.04428} \left(\frac{IFHK\&9/PIHS_{-1} - IFHK\&9_{-1}/PIHS_{-2}}{IFHK\&9_{-1}/PIHS_{-2}}\right)$$

$$+ \underset{(1.50)}{0.55762} \left(\frac{IIN-IIN_{-1}}{IIN_{-1}}\right)$$

$R^2 = .415$ S.E. = 0.061 D.W. = 2.18
Sample Period 1959-1972

(I.2) ICRUB Continued

b. ICRUB $\equiv$ IRIC9.INA

(I.3) ITRUB Capital Investment in Transport and Communications

a.
$$\underset{(0.093)}{\frac{ITRUB-ITRUB_{-1}}{ITRUB_{-1}}} = -\underset{(0.54)}{0.00882}\ QPL7 - \underset{(0.51)}{0.03694}\ GDF$$
$$+ \underset{(1.69)}{0.13608}\left(\frac{IFTR\&9/PIT_{-1} - IFTR\&9_{-1}/PIT_{-2}}{IFTR\&9_{-1}/PIT_{-2}}\right)$$
$$+ \underset{(6.23)}{1.03504}\left(\frac{IIN-IIN_{-1}}{IIN_{-1}}\right)$$

R^2 = .687 S.E. = 0.032 D.W. = 1.22
Sample Period 1959-1972

b. ITRUB $\equiv$ IRIT9.INA

(I.4) IHS Capital Investment in Housing

a.
$$\underset{(0.040)}{\frac{IHS-IHS_{-1}}{IHS_{-1}}} = \underset{(3.48)}{0.05873} - \underset{(1.79)}{0.03956}\ QPL7 - \underset{(2.22)}{0.17929}\ GDF$$
$$+ \underset{(1.57)}{0.09430}\left(\frac{IFHK\&9/PIHS_{-1} - IFHK\&9_{-1}/PIHS_{-2}}{IFHK\&9_{-1}/PIHS_{-2}}\right)$$

R^2 = .506 S.E. = 0.041 D.W. = 2.09
Sample Period 1959-1972

(I.4) IHS Continued

b. IHS = IRIH9.INA

(I.5) ISER Capital Investment in Government, Trade, Services, etc. (excl. Housing)

a.

$$\underset{(0.085)}{\frac{ISER-ISER_{-1}}{ISER_{-1}}} = \underset{(3.30)}{0.21313} - \underset{(3.14)}{0.06021}\ QPL7 - \underset{(2.30)}{0.00632}\ QT50$$

$$- \underset{(1.19)}{0.10566}\ GDF + \underset{(0.33)}{0.10947} \left(\frac{IIN-IIN_{-1}}{IIN_{-1}}\right)$$

R^2 = .719 S.E. = 0.034 D.W. = 1.89
Sample Period 1959-1972

b. ISER = IRIS9.INA

(I.6) INA Capital Investment, Total Non-Agricultural

a. Identity Determination

INA = IIN + ICRUB + ITRUB + IHS + ISER

b. Direct Determination

$$\underset{(0.071)}{\frac{INA-INA_{-1}}{INA_{-1}}} = \underset{(1.54)}{0.02972} - \underset{(3.16)}{0.13948}\ GDF$$

$$+ \underset{(1.[illegible]1)}{0.10351} \left(\frac{ZPG\&/PII_{-1} - ZPG\&_{-1}/PII_{-2}}{ZPG\&_{-1}/PII_{-2}}\right)$$

(I.6) b. Direct Determination, Continued

$$+ \underset{(7.15)}{1.67690}\left(\frac{IFAJ\&/PII_{-1}+IFTR\&9/PIT_{-1}+IFHK\&9/PIHS_{-1}}{IFAJ\&_{-1}/PII_{-2}+IFTR\&9_{-1}/PIT_{-2}+IFHK\&9_{-1}/PIHS_{-2}} - 1.\right)$$

R^2 = .631 S.E. = 0.022 D.W. = 2.24

Sample Period 1959-1972

(I.7) IA Capital Investment in Agriculture

$$\frac{IA-IA_{-1}}{IA_{-1}} = \underset{(6.17)}{0.07676} + \underset{(1.28)}{0.02632}\, QPL7 + \underset{(0.70)}{0.11862}\, \frac{.001XATOT-XATR9}{XATR9}$$

$$\underset{(0.098)}{} - \underset{(2.53)}{0.59362}\left(\frac{.001XATOT_{-1}-XATR9_{-1}}{XATR9_{-1}} - \left|\frac{.001XATOT_{-1}-XATR9_{-1}}{XATR9_{-1}}\right|\right)/2.$$

R^2 = .530 S.E. = 0.035 D.W. = 2.09

Sample Period 1959-1972

(I.8) IFAJ& Adjusted [illegible]ance for Industry and Construction

$$IFAJ\& \equiv IFIN\&9 - 4.9\ QSH68_{-1}$$

(I.9) ITOTAL Total New Capital Investment in the National Economy

$$ITOTAL \equiv INA + IA$$

(I.10) I7OT Change in Inventories, Domestic Trade

$$I7OT = \underset{(4.61)}{2.88277} - \underset{(1.54)}{0.17462}\, S7OT_{-1} + \underset{(1.32)}{0.10871}\,(CR-CRS-CRF)^*$$

$$\underset{(2.25)}{} + \underset{(0.88)}{0.19459}\,\{(CR-CRS-CRF)^* - (CR-CRS-CRF) - 0.45295\}$$

$$+ \underset{(1.10)}{0.06300}\left(\frac{XATOT}{1000} - XATR9 - 0.11439\right)$$

$$- \underset{(1.74)}{0.10766}\left(\frac{XATOT_{-1}}{1000} - XATR9_{-1} - 0.51467\right)$$

$$- \underset{(1.42)}{0.25627} \left(\frac{100\ BDNP\&9}{PIWH70} - \frac{100\ BDNP\&9_{-1}}{PIWH70_{-1}} - 0.50432 \right)$$

$R^2 = .740$ S.E. = 0.589 D.W. = 1.93
Sample Period 1958-1972

$$\text{Where} \quad (\quad)^* = (\quad)_{-1}(.1(\quad)_{-1}/(\quad)_{-2} + .4(\quad)_{-2}/(\quad)_{-3}$$

$$+ .4(\quad)_{-3}/(\quad)_{-4} + .1(\quad)_{-4}/(\quad)_{-5})$$

<u>i.e.</u>, ( ) projected from (.1, .4, .4, .1) moving average of previous four growth rates

(I.11) <u>I70NTA Change in Inventories, Non-trade, Non-agricultural</u>

$$I70NTA = - \underset{(1.08)}{4.08647} - \underset{(3.18)}{3.50049}\ Q55 - \underset{(1.99)}{0.50651}\ IS70NTA_{-1}$$
(5.54)
$$+ \underset{(2.14)}{0.22720}\ GNPNA^* - \underset{(0.71)}{0.23743}\ (GNPNA^* - GNPNA - .50769)$$

$R^2 = .475$ S.E. = 2.594 D.W. = 1.92
Sample Period 1955-1972

(I.12) <u>IS70T Stock of Inventories, Domestic Trade</u>

$$IS70T = IS70T_{-1} + I70T$$

(I.13) <u>IS70NTA Stock of Inventories, Non-trade, Non-agricultural</u>

$$IS70NTA = IS70NTA_{-1} + I70NTA$$

K CAPITAL FORMATION

(K.1) KITOT Industrial Basic Funds (Capital Stock) (at Jan. 1)

$$KITOT_{+1} \equiv KITOT + KNDI$$

(K.2) KIA Adjusted Industrial Capital Stock (at Jan. 1)

$$KIA_{+1} \equiv KITOT_{+1} - KIT589 - KIH629$$

(K.3) KNDI Industrial Capital Formation

$$\underset{(21.23)}{KNDI + 0.05\ KITOT} = \underset{(3.19)}{1.78923}\ QPL7 + \sum_{i=0}^{3} w_i\ IIN_{-i}$$

(2,none)

	w_i	
0	.01473	(0.04)
1	.66683	(2.28)
2	.5757-	(2.05)
3	-.25845	(0.63)
SUM	.99887	

$R^2 = .984$ S.E. = 0.934 D.W. = 1.95
Sample Period 1959-1972

(K.4) KCR Construction Basic Funds (Capital Stock) (at Jan. 1)

$$KCR_{+1} \equiv KCR + KNDC$$

(K.5) **KNDC Construction Capital Formation**

$$\underset{(1.88)}{KNDC} + 0.06\ KCP = \underset{(2.80)}{0.44919}\ QPL5 + \underset{(16.81)}{0.88031}\ ICRUB$$

R^2 = .900 S.E. = 0.306 D.W. = 1.61
Sample Period 1958-1972

(K.6) **KTR Transport and Communications Basic Funds (Capital Stock) (at Jan. 1)**

$$KTR_{+1} \equiv KTR + KNDT$$

(K.7) **KTA Adjusted Transport and Communications Basic Funds (at Jan. 1)**

$$KTA_{+1} \equiv KTR_{+1} + KIT589$$

(K.8) **KNDT Transport and Communications Capital Formation**

$$\underset{(7.28)}{KNDT} + 0.025\ KTR = \underset{(4.74)}{2.41486}\ Q65 + \underset{(53.[illegible]1)}{0.62535}\ (ITRUB+ITRUB_{-1})$$

R^2 = .948 S.E. = 0.495 D.W. = 1.85
Sample Period 1959-1972

(K.9) **KST Government, Trade, Services, etc. (excl. Housing) Basic Funds (Capital Stock) (at Jan. 1)**

$$KST_{+1} \equiv KST + KNDS$$

(K.10) **KHBF Housing Basic Funds (Capital Stock) (at Jan. 1)**

$$KHBF_{+1} \equiv KHBF + KNDH$$

(K.11) KHA Adjusted Housing Basic Funds (at Jan. 1)

$$KHA_{+1} \quad KHBF_{+1} + \frac{7.84}{1.74} KIH629$$

(K.12) KNDS Government, Trade, Services, etc. (excl. Housing) Capital Formation

$$\underset{(10.55)}{KNDS + 0.02\ KST} = \underset{(17.14)}{0.39754}\ (ISER_{-2} + ISER_{-3} + ISER_{-4})$$

$R^2 = .603$ S.E. = 2.39 D.W. = 1.72
Sample Period 1960-1972

(K.13) KNDH Housing Capital Formation

$$\underset{(10.81)}{KNDH + 0.02\ KHBF} = -\underset{(0.80)}{0.32494}\ QPL7 + \underset{(10.45)}{7.84119}\ Q62$$
$$+ \underset{(40.53)}{0.47519}\ (IHS + IHS_{-1})$$

$R^2 = .923$ S.E. = 0.683 D.W. = 1.79
Sample Period 1960-1972

(K.14) KAIR Agricultural Capital Stock (excl. Productive Livestock) (mid-year)

$$\underset{(6.45)}{KAIR - 0.95\ KAIR_{-1}} = \underset{(2.65)}{0.55756}\ QPL7 + \underset{(48.16)}{0.67846}\ \left(\frac{IA + IA_{-1}}{2}\right)$$

$R^2 = .976$ S.E. = 0.430 D.W. = 1.82
Sample Period 1957-1972

(K.15) KTCUS Freight Car Utilization Rate

$$\underset{(241.0)}{KTCUS} = \underset{(15.63)}{157.89569} + \underset{(6.29)}{8.18346}\ QT50 - \underset{(4.19)}{0.16930}\ (QT50)^{2}$$

$$- \underset{(3.49)}{18.40742} \left(\frac{BDNP\&9/PIWH70}{(BDNP\&9/PIWH70)_{-1}} - 1\right)$$

R^2 = .973 S.E. = 2.59 D.W. = 2.03

Sample Period 1958-1972

A OTHER AGRICULTURAL VARIABLES

(A.1) ALVR Livestock (constant price value)

$$\underset{(0.064)}{\frac{ALVR-ALVR_{-1}}{ALVR_{-1}}} = -\underset{(0.75)}{0.08358} - \underset{(2.48)}{0.00738}\ QT50 + \underset{(0.70)}{0.10603}\ \frac{XACTOAL9_{-1}}{1000\ ALVR_{-1}} + \underset{(2.10)}{0.52321}\ \frac{KWAL9_{-1}}{100} + \underset{(1.31)}{0.10728}\left(\frac{XATOT_{-1}}{1000\ XATR9_{-1}} + \frac{XATOT_{-2}}{1000\ XATR9_{-2}} - 2.\right)$$

R^2 = .760 S.E. = 0.014 D.W. = 2.29
Sample Period 1959-1972

(A.2) AACI Current Purchases Index

$$\underset{(0.074)}{\frac{AACI-AACI_{-1}}{AACI_{-1}}} = \underset{(5.44)}{0.09838} - \underset{(1.97)}{0.00206}\ QT50 + \underset{(1.82)}{0.13612}\left(\frac{XATOT/1000}{XATR9} - 1\right) - \underset{(44.30)}{0.29641}\ XAN12$$

R^2 = 0.725 S.E. = 0.016 D.W. = 1.61
Sample Period 1959-1972

Where
$$XAN12 = \tfrac{1}{2}\left(\frac{XATOT_{-1}/1000}{XATR9_{-1}} + \frac{XATOT_{-2}/1000}{XATR9_{-2}} - 2\right) - \tfrac{1}{2}\left\{\left|\frac{XATOT_{-1}/1000}{XATR9_{-1}} - 1\right| + \left|\frac{XATOT_{-2}/1000}{XATR9_{-2}} - 1\right|\right\}$$

X PRODUCTION

(X.1) XITOT Industrial Output Index

a. Cobb-Douglas Constrained

$$\underset{(3.94)}{ln\ XITOT} = -\underset{(44.92)}{3.56029} + \underset{(94.90)}{1.08975} \{0.535\ ln\ (\frac{KIA_{+1} + KIA}{2})$$

$$+ 0.465\ [0.845\ ln\ (NI-NIET) + 0.155\ ln\ NIET]\}$$

R^2 = .998 S.E. = 0.026 D.W. = 0.29
Sample Period 1950-1972

b. C.E.S. Constrained

$$\underset{(3.94)}{ln\ XITOT} = -\underset{(1.26)}{0.43702} - \underset{(2.09)}{0.02082}\ QT50$$

$$-\underset{(9.93)}{0.48073}\ ln\ \{0.535 (\frac{KIA_{+1}+KIA}{2})^{-2.0}$$

$$+ 0.465\ [(NI-NIET)^{0.845} NIET^{0.155}]^{-2.0}\}$$

R^2 = .999 S.E. = 0.021 D.W. = 0.46
Sample Period 1950-1972

(X.2) XCRUB Construction Activity

$$\underset{(3.443)}{ln\ XCRUB} = -\underset{(4.14)}{7.38464} + \underset{(5.32)}{1.16892}\ ln\ NC$$

$$+ \underset{(2.39)}{0.18027}\ ln\ (\frac{KCR_{+1}+KCR}{2})$$

R^2 = .997 S.E. = 0.019 D.W. = 1.46
Sample Period 1958-1972

(X.3) XT7R Transport and Communications Index

$$\ln XT7R = -\underset{(4.13)}{}\ \underset{(5.78)}{3.22571} + \underset{(10.50)}{0.68888}\ \ln\left(\frac{KTA_{+1}+KTA}{2}\right)$$

$$+ \underset{(3.16)}{0.21616}\ \ln \frac{(NTSP+NTSP_{-1})}{2} + \underset{(4.49)}{0.58947}\ \ln KTCUS$$

R^2 = .999 S.E. = 0.011 D.W. = 1.10
Sample Period 1956-1972

(X.4) XGNPGEP Government, Trade, Services, etc. Production Index

$$\ln XGNPGEP = -\underset{(4.41)}{}\ \underset{(14.00)}{3.33267} + \underset{(32.51)}{0.83317}\ \{0.8241\ \ln NG$$

$$+ 0.1759\ \ln \frac{(KST_{+1}+KHA_{+1}+KST+KHA)}{2}\}$$

R^2 = .989 S.E. = 0.020 D.W. = 0.97

(X.5) XATOT Agricultural Output

$$\ln \frac{XATOT}{1000} = \ln XATPK + LPRES$$

Where $\ln$ XATPK is capacity output (linked peak) in agriculture obtained from:

$$\ln XATPK = \underset{(0.33)}{0.54275} + \underset{(11.04)}{0.40856}\ \ln KAIR + \underset{(1.27)}{0.53310}\ \ln (.001NTA)$$
(4.09)

R^2 = .965 S.E. = 0.028 D.W. = 0.65
Sample Period 1959-1972

Actual LPRES is defined as

$$\ln \frac{XATOT}{1000} - (\text{fitted})\ \ln XATPK \text{ and obtained from:}$$

(X.5) XATOT Continued

$$
\begin{aligned}
LPRES = &- \underset{(-0.034)}{0.03348} + \underset{(4.92)}{0.00106}\, JPS9 + \underset{(3.13)}{0.00464}\, JTW9 \\
&+ \underset{(1.68)}{2.82309} \left(\frac{0.0557\, AACI}{KAIR} - 0.10532\right) \\
&+ \underset{(2.13)}{1.10760} \left(\frac{.001\, NTA}{SAI9} - .39076\right)
\end{aligned}
$$

R^2 = .866 S.E. = 0.026 D.W. = 2.63

Sample Period 1959-1972

W WAGES

(W.1) WI& Industrial Average Wage

$$\underset{(-0.078)}{DVWI-DVWIL} = \underset{(3.06)}{0.25780}\,(DHWI-DVWIL) - \underset{(5.22)}{0.40993}$$

$$+ \underset{(7.06)}{1.53100}\,(1.06807)Q68 + \underset{(4.79)}{1.26517}\,Q61$$

$R^2 = 0.882$ S.E. = 0.252 D.W. = 1.44
Sample Period 1959-1972

Where $DVWI = \frac{100WI\&/(0.01PRC_{-1})}{1766.28XITOT/(NI/10^3)}$ $\left(\frac{\text{real wage}}{\text{average product}}\right)$

$DVWIL = \frac{100WI\&_{-1}/(0.01PRC_{-1})}{1766.28XITOT_{-1}/(NI_{-1}/10^3)}$

$DHWI = 30.71635 - 0.57927\ QLT28$ (trend value of DVWI)

(W.2) WASC& State and Collective Farm Average Wage

$$\underset{(2.44)}{DVWA-DVWA_{-1}} = \underset{(2.64)}{0.80684}\ DHWA - \underset{(2.60)}{0.76936}\ DVWA_{-1} - \underset{(0.35)}{1.20073}$$

$R^2 = .388$ S.E. = 2.67 D.W. = 1.66
Sample Period 1959-1972

where $DVWA = \frac{100\ WASC\&/(0.01\ PRC_{-1})}{XATOT/(NTA/10^3)}$ $\left(\frac{\text{real wage}}{\text{average product}}\right)$

$DHWA = -\ 288.72900 + 91.07028\ QLT28$
(trend value of DVWA)

(W.3) WC& Construction Average Wage

$$\frac{WC\&}{WI\&} = \underset{(13.48)}{0.36080}\ QLT28 - \underset{(2.54)}{0.24725}$$

(1.063)

R^2 = .933 S.E. = 0.012 D.W. = 1.81

Sample Period 1958-1972

(W.4) WT& Transport and Communications Average Wage

$$\frac{WT\&}{WI\&} = \underset{(7.72)}{0.85189} \left(\frac{WT\&}{WI\&}\right)_{-1} + \underset{(1.41)}{0.15026}$$

(0.975)

R^2 = .833 S.E. = 0.012 D.W. = 1.34

Sample Period 1959-1972 D. = 1.36

(W.5) WG& Government, Trade, Services, etc., Average Wage

$$\frac{WG\&}{WI\&} = \underset{(11.26)}{0.86122} \left(\frac{WG\&}{WI\&}\right)_{-1} + \underset{(8.43)}{0.08483}\ Q65 + \underset{(1.70)}{0.10195}$$

(0.781)

R^2 = .939 S.E. = 0.010 D.W. = 1.99

Sample Period 1959-1972 D. = 0.02

Z INCOMES

(Z.1) **ZWU& Urban Workers Gross Earnings**

$$\underset{(91.48)}{ZWU\&} = \underset{(169.42)}{1.02919}\ ZWH\& - \underset{(4.90)}{8.00359}\ QLT28 + \underset{(5.01)}{27.22865}$$

$R^2 = 1.000$ S.E. = 0.092 D.W. = 1.96
Sample Period 1960-1972

WHERE ZWH& = NI.WI& + NC.WC& + NT.WT& + NG.WG&

(Z.2) **ZPWSC& State and Collective Farm Wage Payments**

$$ZPWSC\& \equiv NASC.WASC/10.^6$$

(Z.3) **ZPWS& Income from Sale of Farm Products**

$$\ln \underset{(1.953)}{ZPWS\&} = \underset{(2.32)}{0.88832} \ln PAFC70 + \underset{(1.79)}{0.55867} \ln \frac{XATOT}{1000.} - \underset{(4.78)}{4.17838}$$

$R^2 = .803$ S.E. = 0.114 D.W. = 1.31
Sample Period 1955-1972

(Z.4) **ZP& Total Money Income**

$$ZP\& \equiv ZWU\& + ZPWSC\& + ZPWS\& + ZPW.9 + ZPPC\&9 + ZPWM\&9 + BPS\&$$

(Z.5) **ZPAK& Agricultural Income in Kind**

$$\ln \underset{(2.397)}{ZPAK\&} = \underset{(1.89)}{0.73023} \left(\ln PAFC70 + \ln \frac{XATOT}{1000}\right) - \underset{(0.33)}{0.00671}\ QT50$$

$$- \underset{(1.31)}{3.40076}$$

$R^2 = .626$ S.E. = 0.093 D.W. = 1.25
Sample Period 1956-1966

(Z.6) ZD Real Disposable Income

$$ZD \equiv (ZP\& + ZPAK\& - TP\&)/PRC$$

(Z.7) ZPG& Gross Profits

$$ZPG\&/ZPG\&_{-1} = \underset{(73.46)}{1.10300} + \underset{(2.92)}{0.11796}\ Q6768 + \underset{(2.48)}{0.61951}\left(\frac{.001\ XATOT}{XATR9} - 1\right)$$

(1.119)

R^2 = .628 S.E. = 0.052 D.W. = 2.64

Sample Period 1959-1972

P PRICES

(P.1) PNF70 State Retail Price, Non-food Goods

$$\underset{(0.354)}{\frac{PNF70}{1+RTTD9} - \left(\frac{PNF70}{1+RTTD9}\right)_{-1}} = \underset{(1.72)}{0.76891} + \underset{(2.24)}{2.39128}\ Q67 + \underset{(1.57)}{0.15939}\left(PWIQN - \left(\frac{PNF70}{1+RTTD9}\right)_{-1}\right)$$

$R^2 = .353$ S.E. = 1.02 D.W. = 2.16

Sample Period 1958-1972

WHERE PWIQN = WIQN/K (normally marked-up industrial wage)

$$WIQN = \frac{100\ WI\&}{1766.28\ XITOT/(.001\ NI)}$$

$$K = 30.71635 - 0.57927\ QLT28$$

(P.2) PIRF70 State Retail Price, Food Goods

$$\underset{(1.326)}{\frac{PIRF70}{1+RTTD9} - \left(\frac{PIRF70}{1+RTTD9}\right)_{-1}} = \underset{(5.03)}{1.57128} + \underset{(1.57)}{1.80819}\ Q67 + \underset{(2.63)}{0.15688}\left(.85\ PWIQN + .15\ PAFC70_{-1} - \left(\frac{PIRF70}{1+RTTD9}\right)_{-1}\right)$$

$R^2 = .395$ S.E. = 1.08 D.W. = 2.59

Sample Period 1958-1972

(P.3) PAFC70 Price of Food Sold to Co-ops at Negotiated Prices

$$\underset{(0.026)}{\ln PAFC70 - \ln PAFC70_{-1}} = \underset{(0.83)}{0.29615} + \underset{(1.96)}{0.53322}\ \ln CFD - \underset{(1.93)}{0.66879}\ \ln\left(\frac{.2\ XATOT + .8\ XATOT_{-1}}{1000}\right)$$

$R^2 = .215$ S.E. = 0.056 D.W. = 1.90

Sample Period 1956-1972

(P.3) PAFC70 Continued

WHERE $CFD = Z\left(-0.37166\left(\frac{Z}{Z_{-1}}\right) + 0.29492\ XATR9 + 0.19534\ XATR9_{-1} - 0.93662\ PRFH + 1.79493\right)$ (desired food consumption)

$PRFH = \exp(-0.24647 + 0.01212\ QT50)$

(Trend relative food price)

(P.4) PFCC Consumption Price, Food

$PFCC \equiv .875\ PIRF70 + .125\ PAFC70$

(P.5) PRC Consumption Price, Total

$PRC \equiv .60\ PFCC + .40\ PNF70$

(P.6) PIWL70 Wholesale Price, Light Industry

$$PIWL70 - PIWL70_{-1} = \underset{(0.94)}{0.19492} - \underset{(1.95)}{1.50740}\ Q67 + \underset{(2.10)}{0.11793}\ (PWIQN - PIWL70_{-1})$$
(-0.056)

$R^2 = .442$ S.E. = 0.739 D.W. = 2.11
Sample Period 1958-1972

(P.7) PIWH70 Wholesale Price, Heavy Industry

$$PIWH70 - PIWH70_{-1} = -\underset{(1.08)}{0.92370} + \underset{(7.49)}{13.69345}\ Q67 + \underset{(0.68)}{0.08150}\ (PWIQN - PIWH70_{-1})$$
(0.505)

$R^2 = .846$ S.E. = 1.682 D.W. = 2.53
Sample Period 1958-1972

(P.8) PII Investment Deflator, Industry

$$PII = 0.81500\ PXCON9 + 0.20588\ PIWH70$$
(87.9) (13.42) (3.73)

$R^2 = .934$ S.E. = 1.62 D.W. = 0.36
Sample Period 1957-1972

(P.9) PIC Investment Deflator, Construction

$$PIC = 0.32125\ PXCON9 + 0.68619\ PIWH70$$
(91.1) (2.40) (5.64)

$R^2 = .727$ S.E. = 3.56 D.W. = 2.13
Sample Period 1957-1972

(P.10) PIT Investment Deflator, Transport and Communications

PIT = 0.67878 PXCON9 + 0.32086 PIWH70
(87.0) (4.10) (2.13)

R^2 = .699 S.E. = 4.40 D.W. = 0.34
Sample Period 1957-1972

(P.11) PIS Investment Deflator, Government, Trade, Services, etc. (excl. Housing)

PIS = 0.78015 PXCON9 + 0.24469 PIWH70
(88.6) (11.04) (3.81)

R^2 = .899 S.E. = 1.88 D.W. = 0.36
Sample Period 19_7-1972

(P.12) PIHS Investment Deflator, Housing

PIHS = 0.82329 PXCON9 + 0.19220 PIWH70
(87.3) (19.76) (5.08)

R^2 = .971 S.E. = 1.11 D.W. = 0.53
Sample Period 1957-1972

(P.13) PIA Investment Deflator, Agriculture

PIA = 0.34481 PXCON9 + 0.06897 PIWH70 + 58.03934
(93.5) (22.19) (3.00) (30.86)

R^2 = .983 S.E. = 0.410 D.W. = 1.16
Sample Period 1957-1972

C CONSUMPTION

(C.1) CR Total

a. Direct Determination

$$\underset{(1.246)}{\frac{CR}{ZD}} = \underset{(0.97)}{0.45644} - \underset{(1.33)}{1.85219}\frac{QT50}{100} + \underset{(1.51)}{4.11458}\left(\frac{QT50}{100}\right)^2$$

$$+ \underset{(0.72)}{0.21715}\frac{XATOT}{1000\ ZD} + \underset{(1.80)}{0.42949}\frac{XATOT_{-1}}{1000\ ZD}$$

$$+ \underset{(3.61)}{0.50341}\frac{1.76628\ XITOT + .60907\ XGNPGEP}{ZD}$$

R^2 = .980 S.E. = 0.0176 D.W. = 1.84
Sample Period 1956-1972

b. Identity Determination

$$CR \equiv CRF + CRND + CRD + CRS$$

c. Supply Determination

$$\underset{(5.03)}{\ln CR} = - \underset{(2.10)}{0.69350} + \underset{(18.10)}{1.24319}\ \ln CST - \underset{(4.28)}{1.31318}\ \ln \frac{PFCC}{PNF70}$$

$$- \underset{(5.42)}{0.32724}\ \ln\left(\frac{XATOT}{1000\ XATR9}\right) + \underset{(2.04)}{0.10335}\ \ln\left(\frac{XATOT}{1000XATR9}\right)_{-1}$$

R^2 = .999 S.E. = 0.011 D.W. = 1.41
Sample Period 1956-1972

Where CST = CSF + CSN + CSD + CSS (see C.2.c-C.5.c, below)

(C.2) CRF Food

a. Share of Total

$$\frac{CRF}{CR} = \underset{(1.80)}{-\ 0.15501}\ \frac{PFCC}{PNF70} \underset{(0.36)}{-\ 0.01328}\ \frac{1.76628\ XITOT}{ZD}$$

(0.511)

$$\underset{(0.53)}{-\ 0.06181}\ \frac{100\ BDNP\&9}{(PIWH70)\ (ZD)} \underset{(3.90)}{+\ 0.51745}\ \left(\frac{CRF}{CR}\right)_{-1}$$

$$\underset{(3.90)}{+\ 0.84089}\ \left(\frac{CRND}{CR}\right)_{-1} \underset{(2.13)}{-\ 1.09810}\ \left(\frac{CRD}{CR}\right)_{-1} \underset{(5.21)}{+\ 1.32616}\ \left(\frac{CRS}{CR}\right)_{-1}$$

R^2 = .986 S.E. = 0.0035 D.W. = 2.11
Sample Period 1957-1972 D. = 0.26

b. Direct Determination

$$\frac{CRF}{ZD} = \underset{(2.91)}{1.56124} \underset{(2.18)}{-\ 0.81390}\ \frac{PFCC}{PNF70} \underset{(2.09)}{-\ 0.32954}\ \frac{ZD}{ZD_{-1}}$$

(0.642)

$$\underset{(1.67)}{+\ 0.27529}\ \frac{XATOT}{1000ZD} \underset{(0.82)}{+\ 0.15763}\ \frac{XATOT_{-1}}{1000\ ZD}$$

R^2 = .978 S.E. = 0.0143 D.W. = 1.75
Sample Period 1956-1972

c. Supply Determination

$$ln\ CRF = \underset{(0.49)}{-\ 0.22320} \underset{(10.59)}{+\ 1.13792}\ ln\ CSF \underset{(2.87)}{-\ 1.28952}\ ln\ \frac{PFCC}{PNF70}$$

(4.36)

$$\underset{(3.84)}{-\ 0.38005}\ ln\ \left(\frac{XATOT}{1000XATR9}\right) \underset{(1.73)}{+\ 0.13040}\ ln\ \left(\frac{XATOT}{1000XATR9}\right)_{-1}$$

R^2 = .996 S.E. = 0.016 D.W. = 1.92
Sample Period 1956-1972

(C.2) c. Supply Determination, Continued

WHERE

$$\begin{bmatrix} CSF \\ CSN \\ CSD \\ CSS \\ ITS \end{bmatrix} = \begin{bmatrix} .28379 & .48151 & .19344 & .29892 & .0 \\ .18789 & .10655 & .12931 & .26301 & .0 \\ .05081 & .02902 & .05862 & .23474 & .0 \\ .05532 & .04155 & .05563 & .01715 & .0 \\ .42219 & .34317 & .56300 & .18618 & 1.0 \end{bmatrix} \begin{bmatrix} 87.770XITOT/77.0 \\ 55.654XATOT/61671.0 \\ 15.524XT7R/75.099 \\ 13.973XGNPGEP/83.061 \\ 21.101XCRUB/33.0 \end{bmatrix}$$

are synthetic measures of supply based on 1966 Input-Output and delivery matrices:

CSF = consumption, food
CSN = consumption, soft goods
CSD = consumption, durables
CSS = consumption, services
ITS = all other end uses

(C.3) <u>CRND Soft Goods</u>

a. <u>Share of Total</u>

$$\underset{(0.222)}{\frac{CRND}{CR}} = \underset{(0.90)}{0.03940} \frac{PFCC}{PNF70} - \underset{(1.62)}{0.03086} \frac{1.76628XITOT}{ZD}$$

$$- \underset{(1.85)}{0.11033} \frac{100.DNP\&9}{(PIWH70)(ZD)} + \underset{(4.13)}{0.27856} \left(\frac{CRF}{CR}\right)_{-1}$$

$$+ \underset{(5.37)}{0.58998} \left(\frac{CRND}{CR}\right)_{-1} + \underset{(2.67)}{0.6990} \left(\frac{CRD}{CR}\right)_{-1}$$

$$- \underset{(3.24)}{0.42023} \left(\frac{CRS}{CR}\right)_{-1}$$

R^2 = .949 S.E. = 0.0018 D.W. = 2.30
Sample Period 1957-1972 D. = 0.67

(C.3) b. Direct Determination

$$\underset{(0.276)}{\frac{CRND}{ZD}} = \underset{(3.57)}{0.86313} - \underset{(2.40)}{0.48561}\frac{PFCC}{PNF70} - \underset{(3.06)}{0.21556}\frac{ZD}{ZD_{-1}}$$

$$+ \underset{(0.60)}{0.06009}\frac{XATOT}{1000ZD} + \underset{(0.57)}{0.05221}\frac{XATOT_{-1}}{1000\ ZD}$$

$$+ \underset{(0.54)}{0.29550}\frac{QT50}{100} + \underset{(0.18)}{0.18024}\left(\frac{QT50}{100}\right)^2$$

$R^2 = .939$ S.E. = 0.0062 D.W. = 1.19

Sample Period 1956-1972

c. Supply Determination

$$\underset{(3.52)}{\ln CRND} = - \underset{(3.58)}{2.08094} + \underset{(10.15)}{1.66978}\ln CSN - \underset{(3.21)}{2.14558}\ln\frac{PFCC}{PNF70}$$

$$- \underset{(2.59)}{1.48064}\ln\left(\frac{PFCC}{PNF70}\right)_{-1} - \underset{(2.61)}{0.31050}\ln\left(\frac{XATOT}{1000XATR9}\right)$$

$$+ \underset{(1.71)}{0.\text{[illegible]}8535}\ln\left(\frac{XATOT}{1000XATR9}\right)_{-1}$$

$R^2 = .996$ S.E. = 0.022 D.W. = 1.05

Sample Period 1956-1972

(C.4) CRD Durable Goods

a. Share of Total

$$\underset{(0.055)}{\frac{CRD}{CR}} = \underset{(1.27)}{0.02484}\frac{PFCC}{PNF70} + \underset{(2.75)}{0.02323}\frac{1.76628\ XITOT}{ZD}$$

$$- \underset{(1.09)}{0.02875}\frac{100BDNP\&9}{(PIWH70)\ (ZD)} + \underset{(1.82)}{0.05453}\left(\frac{CRF}{CR}\right)_{-1}$$

(C.4) a. Share of Total, Continued

$$- \underset{(3.41)}{0.16623} \left(\frac{CRND}{CR}\right)_{-1} + \underset{(8.98)}{1.04621} \left(\frac{CRD}{CR}\right)_{-1}$$

$$- \underset{(2.88)}{0.16574} \left(\frac{CRS}{CR}\right)_{-1}$$

$R^2 = .998$ S.E. = 0.0008 D.W. = 2.37
Sample Period 1957-1972 D. = 0.84

b. Direct Determination

$$\frac{CRD}{ZD} = - \underset{(3.53)}{0.02884} + \underset{(3.69)}{0.04322} \frac{1.76628\ XITOT}{ZD}$$

(0.067)

$$- \underset{(2.87)}{0.10504} \frac{100BDNP\&/PIWH70}{ZD} + \underset{(9.87)}{0.64085} \frac{QT50}{100}$$

$$- \underset{(6.92)}{1.42135} \left(\frac{QT50}{100}\right)^2$$

$R^2 = .993$ S.E. = 0.0010 D.W. = 1.53
Sample Period 1957-1972

c. Supply Determination

$$\ln CRD = - \underset{(4.59)}{3.23206} + \underset{(7.81)}{2.62125} \ln CSD - \underset{(4.14)}{0.17132} QT50^2/100.$$

(2.07)

$$+ \underset{(0.99)}{0.79544} \ln\left(\frac{PICC}{PNF70}\right)_{-1}$$

$R^2 = .996$ S.E. = 0.034 D.W. = 1.59
Sample Period 1957-1972

(C.5) CRS Services

a. Share of Total

$$\frac{CRS}{CR} = \underset{(1.68)}{0.09078}\,\frac{PFCC}{PNF70} + \underset{(0.89)}{0.02092}\,\frac{1.76628XITOT}{ZD}$$

(0.212)

$$+ \underset{(2.73)}{0.20088}\,\frac{100BDNP\&9}{(PTWH70)(ZD)} + \underset{(1.79)}{0.14946}\left(\frac{CRF}{CR}\right)_{-1}$$

$$- \underset{(1.95)}{0.26463}\left(\frac{CRND}{CR}\right)_{-1} + \underset{(1.09)}{0.35198}\left(\frac{CRD}{CR}\right)_{-1}$$

$$+ \underset{(1.62)}{0.25978}\left(\frac{CRS}{CR}\right)_{-1}$$

$R^2 = .961$ S.E. = 0.0022 D.W. = 1.97
Sample Period 1957-1972 D. = 0.08

b. Direct Determination

$$\frac{CRS}{ZD} = \underset{(0.49)}{0.01632} + \underset{(7.76)}{0.45799}\,\frac{.60907\ XGNPGEP}{ZD} + \underset{(6.23)}{0.79519}\,\frac{QT50}{100}$$

(0.263)

$$- \underset{(5.88)}{1.98105}\left(\frac{QT50}{100}\right)^2$$

$R^2 = .965$ S.E. = 0.0029 D.W. = 1.80
Sample Period 1956-1972

c. Supply Determination

$$\ln CRS = \underset{(12.51)}{1.63064} + \underset{(17.55)}{0.94947}\ln CSS + \underset{(0.60)}{0.15428}\ln\frac{PFCC}{PNF70}$$

(3.47)

$$- \underset{(4.34)}{0.19929}\ln\left(\frac{XATOT}{1000XATR9}\right) - \underset{(0.35)}{0.01594}\ln\left(\frac{XATOT}{1000XATR9}\right)_{-1}$$

$$+ \underset{(2.32)}{0.02462}\ln\frac{ITS}{CST+ITS}$$

$R^2 = .999$ S.E. = 0.009 D.W. = 1.86
Sample Period 1956-1972

ITA = ITOTAL + BNAUK&/(.2WG&/1246.8 + .8 PIWH70/100.)
+ 100 BDNP&9/PIWH70

(investment plus science and defence non-personnel)

T BUDGET REVENUES

DDF, DPRC and ZW& are defined below (T.7).

(T.1) TDP& Deductions from Profit

$$\underset{(0.732)}{\frac{TDP\&}{ZPG\&}} = \underset{(69.84)}{1.02798}\ RTDP9 + \underset{(2.49)}{1.60217}\ DDF - \underset{(2.46)}{0.10076}\ Q67_{-1}$$

$R^2 = 0.780$ S.E. = 0.039 D.W. = 1.30
Sample Period 1958-1972

(T.2) TT& Turnover Tax

$$\underset{(0.400)}{\frac{TT\&}{ZW\&}} = \underset{(15.52)}{0.83810} - \underset{(5.38)}{0.04101}\ QT50 + \underset{(3.09)}{0.00078689}\ (QT50)^2 + \underset{(2.92)}{1.00843}\ DPRC_{-1} - \underset{(1.85)}{0.73170}\ DDF$$

$R^2 = 0.973$ S.E. = 0.013 D.W. = 1.28
Sample Period 1958-1972

(T.3) TOSS& Other Revenues from Social Sector

$$\underset{(0.618)}{\frac{TOSS\&}{ZPG\&}} = \underset{(35.99)}{0.47410} + \underset{(15.69)}{0.34287}\ Q5861 + \underset{(8.91)}{0.19473}\ Q6265$$

$R^2 = 0.956$ S.E. = 0.035 D.W. = 2.06
Sample Period 1958-1972

(T.4) TSD& Social Insurance Deductions

$$\underset{(0.057)}{\frac{TSD\&}{ZW\&}} = \underset{(313.92)}{0.05724} + \underset{(3.42)}{0.00241}\ Q59$$

$R^2 = 0.475$ S.E. = 0.001 D.W. = 1.28
Sample Period 1958-1972

(T.5) TPOP& Taxes on the Population

$$\frac{TPOP\&}{ZW\&} = \underset{(85.03)}{0.09193} + \underset{(7.96)}{0.02019}\ Q5859 - \underset{(6.02)}{0.01174}\ Q6467$$
(0.092)

$R^2 = 0.915$ S.E. = 0.003 D.W. = 1.52
Sample Period 1958-1972

(T.6) TP& Personal Taxes (for Disposable Income)

TP& ≡ TPOP& + TPA&9

(T.7) TR& Total Revenues, State Budget

TR& ≡ TDP& + TT& + TOSS& + TPOP&

Where:

$DDF \equiv \frac{BD\&9}{BGN\&} - 0.132$ Defense Share, Deviation from Mean

$DPRC \equiv \frac{PRC}{PRC_{-1}} - 1.$ Consumption Price Deflator, Rate of Change

ZW& ≡ ZWU& + ZPWSC& + ZPWC&9 Total Money Wage Income

B BUDGET OUTLAYS

DDF is defined in (T.7) above. DWG is defined below in (B.7).

(B.1) BF& Financing of the National Economy

$$\frac{BF\&}{BF\&_{-1}} = \underset{(98.06)}{1.07077} - \underset{(3.17)}{0.11476}\ Q61 + \underset{(2.59)}{0.06917}\ Q6768 + \underset{(3.44)}{0.12474}\ Q70$$

(1.081)

$R^2 = 0.755$ S.E. = 0.035 D.W. = 2.88
Sample Period 1959-1972

(B.2) BSC& Social and Cultural Measures (includes Science)

$$\frac{BSC\&}{BSC\&_{-1}} = \underset{(350.84)}{1.08046} + \underset{(6.06)}{0.56558}\ DWG + \underset{(0.62)}{0.00751}\ Q68$$

(1.081)

$R^2 = 0.802$ S.E. = 0.011 D.W. = 1.39
Sample Period 1959-1972

(B.3) BNAUK& Science

$$\frac{BNAUK\&}{BNAUK\&_{-1}} = \underset{(58.14)}{1.24905} - \underset{(6.65)}{0.00841}\ QT50$$

(1.110)

$R^2 = 0.786$ S.E. = 0.019 D.W. = 2.50
Sample Period 1959-1972

(B.4) BAD& Administration

$$\frac{BAD\&}{BAD\&_{-1}} = \underset{(88.09)}{1.02926} + \underset{(4.09)}{1.33383}\ DWG - \underset{(1.16)}{0.78772}\ DDF + \underset{(0.58)}{0.01831}\ Q6768$$

(1.031)

$R^2 = 0.672$ S.E. = 0.040 D.W. = 2.28
Sample Period 1959-1972

(B.5) BRES& Expenditure Residual

$$\underset{(0.039)}{\frac{BRES\&}{BGN\&}} = \underset{(12.97)}{0.08431} - \underset{(6.62)}{0.002623}\, QT50 - \underset{(3.48)}{0.01670}\, Q63 - \underset{(3.65)}{0.01086}\, Q6768$$

$$+ \underset{(1.49)}{0.00622}\, DWG - \underset{(1.65)}{0.18515}\, DDF$$

$R^2 = 0.934$ S.E. = 0.004 D.W. = 2.80
Sample Period 1958-1972

(B.6) BGN& Total Expenditures

$$BGN\& \equiv BF\& + BSC\& + BAD\& + BRES\& + BD\&9$$

(B.7) BPS& Transfer Payments (for Disposable Income)

$$\underset{(0.487)}{\frac{BPS\&}{BSC\&-BNAUK\&}} = \underset{(129.34)}{0.49375} + \underset{(1.75)}{0.01005}\, Q5861 - \underset{(4.72)}{0.02438}\, Q6368$$

$R^2 = 0.787$ S.E. = 0.009 D.W. = 2.32
Sample Period 1958-1972

$$DWG \equiv \frac{WG\&}{WG\&_{-1}} - 1.03536$$ Government Wage, Deviation of Rate of Change from Mean

E EXPORTS

(E.1) EEF\$ To CMEA, Food

$$\underset{(6.11)}{\ln \text{EEF\$}} = \underset{(3.71)}{2.90136} + \underset{(4.06)}{0.51843} \ln \text{EEF\$}_{-1} + \underset{(1.31)}{0.77452} (\ln \text{MET\$} - \ln \text{EEO\$})$$

$$+ \underset{(7.62)}{2.50598} \left(\ln \frac{\text{XATOT}_{-1}}{1000} - \ln \text{XATR9}_{-1}\right)$$

$R^2 = .904$ S.E. $= 0.065$ D.W. $= 2.03$
Sample Period 1961-1971 D. $= 0.06$

(E.2) EEO\$ To CMEA, Other

$$\underset{(8.41)}{\ln \text{EEO\$}} = \underset{(2.20)}{1.18216} + \underset{(2.42)}{0.50021} \ln \text{YCMEA9} + \underset{(4.06)}{0.61935} \ln \text{MET\$}$$

$$- \underset{(1.24)}{0.06886} \ln \text{EEF\$}$$

$R^2 = .991$ S.E. $= 0.030$ D.W. $= 2.18$
Sample Period 1961-1971

(E.3) EOT\$ To Other CPE's, Total

$$\underset{(7.09)}{\ln \text{EOT}} = - \underset{(0.29)}{2.24923} + \underset{(2.85)}{0.38445} \ln \text{EOT\$}_{-1} + \underset{(2.79)}{0.39018} \ln \text{WTX9}$$

$$+ \underset{(1.54)}{1.85216} \ln \text{PWT9}_{-1} - \underset{(1.21)}{0.86051} \ln \text{PTX9}_{-1}$$

$R^2 = .980$ S.E. $= 0.046$ D.W. $= 2.12$
Sample Period 1961=1971 D. $= 0.22$

(E.4) EIT$ To Developed West, Total

$$\underset{(7.41)}{ln\ EIT\$} = \underset{(5.73)}{1.46842} + \underset{(23.06)}{1.14170}\ ln\ WTX9$$

$$+ \underset{(1.98)}{0.44890}\ ln\ \left(\frac{XATOT_{-1}}{1000} - ln\ XATR9_{-1}\right)$$

$$+ \underset{(0.50)}{0.07184}\ \{ln(MIT\$ - MIW\$) - ln(MIT\$ - MIW\$)_{-1}\}$$

R^2 = .990 S.E. = 0.040 D.W. = 1.63
Sample Period 1960-1971

(E.5) ELUT$ To LDC's, Total

$$\underset{(7.14)}{ln\ ELUT\$} = \underset{(0.64)}{0.47876} + \underset{(8.99)}{1.28155}\ ln\ WTX9$$

$$+ \underset{(0.57)}{0.33328}(ln\ \frac{XATOT_{-1}}{1000} - ln\ XATR9_{-1})$$

R^2 = .921 S.E. = 0.116 D.W. = 2.12
Sample Period 1960-1971

(E.6) EWT$ To World, Total

$$EWT\$ = EEF\$ + EEO\$ + EOT\$ + EIT\$ + ELUT\$$$

(E.7) EWT70 To World, Total (at domestic constant prices)

$$EWT70 = 1.3\ \frac{100\ EWT\$}{(PREX9)\ (PTX9)}$$

M IMPORTS

(M.1) MET$ From CMEA, Total

$$\underset{(8.49)}{ln\ MET\$} = \underset{(2.30)}{2.14589} + \underset{(1.94)}{0.65611}\ ln\ XITOT + \underset{(1.51)}{0.4159}\ ln\ MET\$_{-1}$$

R^2 = .971 S.E. = 0.050 D.W. = 1.6)
Sample Period 1961-1971 D. = 1.63

(M.2) MOT$ From Other CPE's, Total

$$\underset{(6.78)}{ln\ MOT\$} = \underset{(1.91)}{4.91866} + \underset{(0.84)}{0.29205}\ ln\ MOT\$_{-1} - \underset{(0.43)}{0.00750}\ QT50$$

R^2 = .231 S.E. = 0.39 D.W. = 2.05
Sample Period 1961-1971 D. = 0.14

(M.3) MIW$ From Developed West, Wheat and Wheat Flour

$$\underset{(4.54)}{ln\ MIW\$} = - \underset{(1.35)}{13.34513} + \underset{(1.80)}{4.10408}\ ln\ XITOT$$

$$- \underset{(2.15)}{16.58510}\ (ln\ \frac{XATOT_{-1}}{1000} - ln\ XATR9_{-1})$$

R^2 = .427 S.E. = 1.506 D.W. = 2.13
Sample Period 1961-1971

(M.4) MIEM$ From Developed West, Machines, Equipment, Metals and Manufactures

$$\underset{(6.80)}{ln\ MIEM\$} = - \underset{(3.74)}{7.96068} + \underset{(1.84)}{0.61031}\ ln\ ITOTAL - \underset{(4.49)}{0.05485}\ ln\ MIW\$$$

(M.4) MIEM\$ Continued

$$+ \underset{(6.63)}{0.60705} \ln KGOLD\$9_{-1}$$

$$- \underset{(2.60)}{1.79987} (.9 \ln P599_{-1} - 1.2 \ln WI\&_{-1})$$

$R^2 = .980$ S.E. = 0.058 D.W. = 2.81
Sample Period 1961-1971

(M.5) MIO\$ From Developed West, Other

$$\underset{(6.54)}{\ln MIO\$} = - \underset{(7.50)}{2.49916} + \underset{(26.43)}{2.13407} \ln XI_{-1} - \underset{(1.72)}{0.01747} \ln MIW\$$$

$R^2 = .990$ S.E. = 0.054 D.W. = 1.28
Sample Period 1961-1971

(M.6) MLF\$ From LDC's, Food

$$\underset{(5.52)}{\ln MLF\$} = - \underset{(4.62)}{4.70594} + \underset{(10.06)}{2.35611} \ln XITOT$$

$$- \underset{(1.35)}{1.07449} \left(\ln \frac{XATOT_{-1}}{1000} - \ln XATR9_{-1}\right)$$

$R^2 = .930$ S.E. = 0.155 D.W. = 1.66
Sample Period 1961-1971

(M.7) MLUO\$ From LDC's, Other

$$\underset{(6.40)}{\ln MLUO\$} = - \underset{(0.92)}{1.56951} + \underset{(6.47)}{1.20931} \ln XITOT + \underset{(2.34)}{0.36475} \ln KGOLD\$9_{-1}$$

$R^2 = .843$ S.E. = 0.113 D.W. = 1.89
Sample Period 1961-1971

(M.8) MWT\$ From World, Total

$$MWT\$ \equiv MET\$ + MOT\$ + MIW\$ + MIEM\$ + MIO\$ + MLF\$ + MLUO\$$$

(M.9) MWT70 From World, Total (at domestic constant prices)

$$MWT70 = 2.03 \frac{100\ MWT\$}{(PREX9)\ (PTM9)}$$

G AGGREGATE IDENTITIES AND BALANCES

(G.1) GNPNA Non-agricultural Gross National Product

$$GNPNA \equiv 1.76628\ XITOT + 0.59943\ XCRUB + 0.34390\ XT7R + 0.60907\ XGNPGEP$$

(B.2) GNPA Agricultural Gross National Product

$$GNPA \equiv \frac{XATOT}{1000} - 11.230\ \frac{AACI}{135}$$

(G.3) GNP Gross National Product

$$GNP \equiv GNPNA + GNPA$$

(G.4) GIKREP Capital Repair

$$0.17391\ \frac{GIKREP}{KSUM} = \underset{(52.21)}{0.02942} - \underset{(6.48)}{0.00021}\ QT50$$

$R^2 = .792$ S.E. = 0.0004 D.W. = 1.60
Sample Period 1960-1972

WHERE $KSUM = KAIR + \frac{1}{2}(KIA + KCR + KTA + KHA + KST)_{+1} + \frac{1}{2}(KIA + KCR + KTA + KHA + KST)$

(G.5) GRESEM End Use Residual

$$GRESEM = \underset{(8.08)}{7.57296} + \underset{(10.69)}{0.30602}\left(\frac{XATOT}{1000} - XATR9\right) + \underset{(2.90)}{7.43741}\,Q67$$

(1.52)

$R^2 = .546$ S.E. = 2.44   D.W. = 2.50
Sample Period 1960-1972

NOTE: Actual values for GRESEM are defined as

$$GRESEM = GNP + \frac{MWT70}{1000} - \frac{EWT70}{1000} - GEUSUM - CR$$

GEUSUM defined below.

(G.6) GSIMRES Simulation Residual

$$GSIMRES \equiv GNP + \frac{MWT70}{1000} - \frac{EWT70}{1000} - GEUSUM - CR - GRESEM$$

NOTE: Actual values for GSIMRES are identically zero. Solution values represent the difference between "production" and "end use" determinations of GNP when consumption is not obtained by residual identity.

Actual and solution values of GEUSUM are obtained from:

$$GEUSUM = \frac{\left(BAD\& + \frac{6.954}{49.5}(BSC\&-BNAUK\&)\right)}{\left(.65\frac{WG\&}{1246.8} + .35\frac{PIWH70}{100}\right)} + (BD\&9 - BDNP\&9)$$

$$+ \frac{100.BDNP\&9}{PIWH70} + \frac{BNAUK\&}{\left(.2\frac{WG\&}{1246.8} + .8\frac{PIWH70}{100.}\right)}$$

$$+ I70T + I70NTA + ITOTAL + .17391\ GIKREP$$

Non-Consumption
GNP, End-Use = Administration + Defense + Science + Inventory Change + New Investment + Capital Repair.

APPENDIX B: DATA SOURCES AND THE USSR DATABANK

One of the major tasks of our research was the collection of a data base for the Soviet economy sufficient for the construction of a econometric model. After an intensive effort in the Fall of 1973, data collection for the project continued until mid-summer 1974.* The result is a Databank for the Soviet economy designed in WEFA standard format that includes decription, units and source. The databank presently includes over 650 variables, including direct source data, transformations of source data, and project defined variables (dummy variables, etc.). An alphabetical list of the USSR Databank variables has been included at the end of this appendix. In the remainder of this appendix, we will comment upon the data sources used for the Model and particular problems which have arisen during our research.

Data Choices in an Econometric Model of the USSR

In a model designed for a supply-oriented economic system such as the Soviet Union, there are definite advantages to using physical and real (deflated) variables whenever possible. In the Niwa models of Soviet growth, for example, there are no price variables and the urban real wage is simply aggregate urban consumption divided by urban employment. While our model does use variables with current ruble values and numerous price and wage variables, our behavioral relationships for production, consumption and investment are all estimated in real terms.

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In production function estimation, where real variables are essential, one still faces a critical choice between official data for sectoral output and Western reconstructed data. For the principal Soviet sectors, industry and agriculture, the choice is between the official series for gross value of output at constant prices and a Western series based upon a sample of commodity series using base-year prices as weights. While most econometric research on Soviet production functions has used the official GVO series (directly or indirectly), we chose to go the other route. Soviet growth rates computed from official data are always higher than growth rates computed from Western reconstructed series. Thus, we expect to find lower estimates for the rate of technical progress (or lower estimates for returns to scale) than those obtained with official data More importantly, we wanted to link our sectoral outputs to a constant ruble measure of GNP that would be consistent with the estimates of Soviet GNP produced in the West. We will return to this point later in this discussion.

Consequently, we chose the Greenslade-Wallace series for our measure of Industrial Output and the Diamond-Krueger series for our measure of Agricultural Output. Using Kaplan's methodology, we constructed our own output series for Soviet transport and communications. For the construction sector, we adopted the official series for construction-installation work in constant estimate prices. For the "unproductive" sector of the model, we used a value-added measure constructed by the U.S. Government for their estimates for Soviet GNP. For sectoral input data, we used the Soviet series for basic funds in 1955 prices for our capital measures and the Feshbach-Rapawy series for our labor measures.

The introduction of current ruble statistics becomes of greater importance as soon as the modeller wishes to explore the income-expenditure balance relationships for both government and household sectors. If one were to reduce all such flows to real terms, he would have either to choose a uniform but misleading deflator to maintain consistency or handle a multitude of category deflators which would perhaps provide a truer real value for each category but also introduce serious inconsistencies. Consequently, we have linked the real production subsystem to the nominal income-expenditure subsystem through a limited number of nominal wage rates and price variables. A similar real-nominal transform was also necessary to link Soviet production to the foreign trade subsystem of the macroeconomic model.

Supposing that one has specified the appropriate links between the production subsystem and the income-expenditure and foreign-trade subsystems, there is still a choice to be made concerning the accounting basis and the data to be used. Here the choice seems quite clear given the confusion and obscurity in Soviet statistics on incomes and the final use of net material product. With the extensive effort made by Western economists to reconstruct Soviet national accounts on a GNP basis during the past twenty years, any aspiring modeller should regard himself as particularly fortunate. Thus, there is an additional reason for using Western data for the estimation of production functions since those output series have been directly linked to the reconstructed GNP accounts which provide the framework for the nominal subsystems of the econometric model.

Our task has been facilitated by structuring the model upon the estimates of 1970 GNP prepared by the U.S. Government following Bergsonian methods. Using price variables based with 1970 = 100, we are able to deflate current ruble series (gross profits, defense expenditures, etc.) and compute real GNP on both a sector-of-origin and an end-use basis. Thus, in contrast to Niwa's models of Soviet growth, our model adheres to the discipline imposed by national income identities and maintains the real/nominal interface standard in models of Western economies.

Data Construction Necessary for the Model

Beyond the collection of available Soviet economic data, we have had to construct certain variables for the particular needs of the Model. We will describe briefly the major tasks of data construction completed during the past year.

(1) An Output Index for Soviet Transport and Communications*

We essentially replicated the work done by Norman Kaplan for 1928-1963. The transportation index was constructed from six official series for freight transportation and five series for passenger transportation. These eleven series were aggregated using 1970 ruble-cost weights to derive an output index for Soviet transportation. Two communications indexes were constructed, one using the official ruble-value series and the other using employment in communications. The transport and communications indexes were combined with 1970 value-added weights.

(2) "Negotiated" Agricultural Price

In our consumption price index, there are two food price components, one for retail sales and one for direct transactions in the collective farm market. Initially, we planned to use the official index for "extrarural collective farm market" prices. Vladimir Treml suggested that an alternative

*See Project Working Paper #14 for a more complete discussion, a list of weights, and the computed output series.

indicator for free market food prices could be obtained from official price and quantity data for 16 food commodities sold to consumer cooperatives at negotiated prices (for resale on commission). Price indexes were computed using 1968 and 1970 quantity weights and current-year quantity weights. After comparison, we selected the 1970-weighted index for further analysis. Using both this negotiated agricultural price and the official collective farm market price in a standard adjustment specification, we chose the former as a proxy for "free" agricultural prices for two reasons. First, its movement over the sample period was more consistent with our adjustment model based upon "normal" food consumption and agricultural output.* Second, data on negotiated agricultural sales are based upon transaction statistics monitored by the banking system in contrast to the sampling procedure used for collective farm market sales.

(3) Inventory Data**

Inventory data for two categories, trade/supply network and non-trade agricultural enterprises and organizations, were constructed through 1972 using the methodology of Moorsteen and Powell. This procedure provides estimates for Soviet inventories in current prices by sector, which were then deflated by official wholesale price indexes to generate constant ruble inventory stock estimates. The major category of inventories not included in our data is the State grain reserve. Presently, the State grain reserves fall within the residual category which we have endogenized in the Model.

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* See W.P. #20 for a description of the estimation procedure.

** See W.P. #24 for a discussion of data construction and the estimation of inventory equations for the Model.

(4) Weather Indexes*

Weather indexes for Soviet agriculture were constructed to measure weighted deviations from monthly normal values for precipitation and temperature. The spring-summer precipitation measure is based on April-September deviations for five representative regions. A representative region serves as a proxy for a larger area with similar weather characteristics, and its deviation is weighted by the properly normalized average crop output during 1969-1971 for the larger areas. The regions included in the five groups account for almost 96% of the total harvested grain in 1969-1971. The winter temperature index is based upon only one region, the Southern Ukraine, and is designed to capture weather impact upon winter wheat. Obviously the impact of weather on the Soviet harvest is more complex than suggested by these simple indexes. Further experimentation with other weather indicators in our agricultural production function might further reduce our prediction errors.

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* See Appendix A of W.P. #21 for the construction of spring-summer weather variables. A discussion of the winter temperature index is in W.P. #26.

DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
229	AAC	AGRICULTURAL INPUTS, CURRENT PURCHASES			229	B1955R	M-P		
67	AACI	INDEX OF AGRICULTURAL INPUTS, CURRENT PURCHASES			67	1965=100.	TRAN	115R	A.2
65	AALI	INDEX OF AGRICULTURAL INPUTS, LIVESTOCK			65	1965=100.0	a		
72	AAS	SOWN AREA, ALL CROPS			72	M HECT			
74	AASF	SOWN AREA, FODDER CROPS			74	M HECT	a		
73	AASG	SOWN AREA, ALL GRAINS			73	M HECT	2		
560	ALVR	VALUE OF PRODUCTIVE LIVESTOCK, (MEAN YEAR 1955 PRICES)			560	B RUBLES	DIAMOND	113R	A.1
362	BADR	STATE BUDGET EXPENDITURES, ADMINISTRATION			362	B CUR R	NKHOZ	153R	B.4
361	BD89	STATE BUDGET EXPENDITURES, DEFENSE			361	B CUR R	NKHOZ	152E	
568	BDLPA9	DEFENSE NONPERSONNEL EXPENDITURES (CURRENT PRICES)			568	B RUBLES	CONN73	123E	
564	BDPER8	DEFENSE OUTLAYS FOR PERSONNEL (CURRENT PRICES)			564	B RUBLES	CONN 73		
359	BFA	STATE BUDGET EXPENDITURES, FINANCING THE NATIONAL ECONOMY, TOTAL			359	B CUR R	NKHOZ	150R	B.1
609	BFAP8	EXPENDITURES ON ADMINISTRATION, ANNUAL PLAN			609	B RUBLES	PRAVDA		
606	BFD98	DEFENSE EXPENDITURES, ANNUAL PLAN			608	B RUBLES	PRAVDA		
607	BFFR	FINANCING OF THE NATIONAL ECONOMY, ANNUAL PLAN			607	B RUBLES	PRAVDA		
606	BFGLR	TOTAL BUDGET EXPENDITURES, ANNUAL PLAN			606	B RUBLES	PRAVDA		
358	BGNR	STATE BUDGET EXPENDITURES, GOVT SPENDING, NATL ACCOUNTS BASIS			358	B CUR R	NKHOZ	149R	B.6
563	BIAUK8	SCIENCE EXPENDITURES, USSR BUDGET (CURRENT PRICES)			563	B RUBLES	CONN73	154R	B.3
202	BPS8	TRANSFER PAYMENTS (1966 FIGURES)			202	B R	66JEC526		
188	BPS89	TRANSFER PAYMENTS (1973 FIGURES)			188	B R	73JEC393	107R	B.7
613	BRES8	STATE BUDGET,EXPENDITURE RESIDUAL			613	B RUBLES	NKHOZ	155R	B.5
360	BSCR	STATE BUDGET EXPENDITURES, SOCIAL CULTURAL MEASURES			360	B CUR R	NKHOZ	151R	B.2
363	BS98	STATE BUDGET EXPENDITURES, BUDGET SURPLUS			363	B CUR R	NAR KHOZ		
214	C	CONSUMPTION, TOTAL			214	B1966R	73JEC399		
210	CD	CONSUMPTION, CONSUMER DURABLES, TOTAL			210	B1966R	73JEC399		
208	CF	CONSUMPTION, FOOD, TOTAL			208	B1966R	73JEC398		
209	CND	CONSUMPTION, SOFT GOODS, TOTAL			209	B1966R	73JEC398		
415	CR	CONSUMPTION , GER BASIS , TOTAL			415	B 1970R	TRAN	134I	C.1
413	CRD	CONSUMPTION , GER BASIS , CONSUMER DURABLES			413	B 1970R	TRAN	132R	C.4
411	CRF	CONSUMPTION , GER BASIS , FOOD			411	B 1970R	TRAN	130R	C.2
412	CRND	CONSUMPTION , GER BASIS , SOFT GOODS			412	B 1970R	TRAN	131R	C.3
414	CRS	CONSUMPTION , GER BASIS , SERVICES			414	B 1970R	TRAN	133R	C.5
227	CRSAL8	RETAIL SALES			227	B R	NAR KHOZ		
213	CS	CONSUMPTION, SERVICES, PERSONAL & HEALTH AND EDUC.			213	B1966R	73JEC399		
212	CSHE	CONSUMPTION, HEALTH AND EDUCATION, TOTAL			212	B1966R	73JEC399		
211	CSPS	CONSUMPTION, PERSONAL SERVICES, TOTAL			211	B1966R	73JEC399		
112	EATI	EXPORTS, OTHER NON-CMEA COMMUNIST, TOTAL			112	MSUS	73JEC697		
110	ECTS	EXPORTS, CHINA, TOTAL			110	MSUS	73JEC697		
177	EDCTS	EXPORTS, CMEA, TOTAL			177	MSUS	[illegible]		
179	EDLTS	EXPORTS, LDC'S, TOTAL			179	MSUS	[illegible]		
100	EDNTS	EXPORTS, LDC'S, TOTAL			100	MSUS	[illegible]		
178	EDOTS	EXPORTS, OTHER CPE'S, TOTAL			178	MSUS	[illegible]		
176	EDYTS	EXPORTS, YUGOSLAVIA, TOTAL			176	MSUS	[illegible]		
105	EEFS	EXPORTS, CMEA, FOOD			105	MSUS	73JEC706	002R	E.1
130	EEOS	EXPORTS, CMEA OTHER (EX.FOOD)			130		TRAN	003R	E.2
104	EETS	EXPORTS, CMEA, TOTAL			104	MSUS	73JEC708		
115	EIFS	EXPORTS, DEVELOPED WEST, FOOD			115	MSUS	73JEC700		
131	EIOS	EXPORTS, DEVELOPED WEST, OTHER (EX. FOOD)			131	MSUS	TRAN		
114	EITS	EXPORTS, DEVELOPED WEST, TOTAL			114		73JEC706	98	E.4
121	ELFS	EXPORTS, LDC'S, FOOD			121	MSUS	73JEC711		

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SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
120	ELTS	EXPORTS, LDC'S, TOTAL			120	M$US	73JEC711		
132	ELUOS	EXPORTS, LDC'S AND UNSPECIFIED, OTHER (EX. FOOD)			132	M$US	TRAN		
128	ELUTS	EXPORTS, LDC'S AND UNSPECIFIED, TOTAL			128		TRAN	129	E.5
127	EOTS	EXPORTS, CHINA AND OTHER NON-CMEA COMMUNIST, TOTAL			127		TRAN	0058	E.3
125	EUTS	EXPORTS, UNSPECIFIED, TOTAL			125	M$US	73JEC711		
98	EWFS	EXPORTS, WORLD, FOOD			98	M$US	73JEC705		
129	EWOS	EXPORTS, WORLD, OTHER (EX. FOOD)			129	M$US	TRAN		
97	EWTS	EXPORTS, WORLD, TOTAL			97		73JEC706	14I	E.6
365	EWT70	EXPORTS, WORLD, TOTAL, DOMESTIC 1970 PRICES			365	R 1970	TRAN	16I	E.7
442	FLHL	LONGTERM CREDIT OF KOLKHOZ FOR REARING OF LIVESTOCK			442	B CUR R	KAN KHOZ		
554	FG6A	FINAL DEMAND, AGRICULTURE (CALCULATED BY 66 I-O)				B RUBLES	TRAN		
553	FG6C	FINAL DEMAND, CONSTRUCTION (CALCULATED BY 66 I-O)				B RUBLES	TRAN		
556	FG6G	FINAL DEMAND, GOVERNMENT, TRADE AND SERVICES				B RUBLES	TRAN		
552	FG6I	FINAL DEMAND, INDUSTRY (CALCULATED BY 66 I-O)				B RUBLES	TRAN		
555	FG6T	FINAL DEMAND, TRANS. AND COMM. (CALCULATED BY 66-I-O)				B RUBLES	TRAN		
83	GADMEP	ESTABLISHED PRICES, GNP END USE, ADMINISTRATION			83	1970=100.0	730ER25		
92	GADMFC	FACTOR COST, GNP END USE, ADMINISTRATION			92	1970=100.0	730ER27		
592	GCDEP	GNP END-USE, CONSUMPTION : DURABLE GOODS			592	1970=100.	OER73		
599	GCEEP	GNP END-USE, CONSUMPTION : EDUCATION			599	1970=100.	OER73		
590	GCFEP	GNP END-USE, CONSUMPTION : FOOD			590	1970=100.	OER73		
598	GCHEP	GNP END-USE, CONSUMPTION : HEALTH			598	1970=100.	OER73		
591	GCSEP	GNP END-USE, CONSUMPTION : SOFT GOODS			591	1970=100.	OER73		
81	GCONEP	ESTABLISHED PRICES, GNP END USE, CONSUMPTION			81	1970=100.0	730ER25		
90	GCONFC	FACTOR COST, GNP END USE, CONSUMPTION			90	1970=100.0	730ER27		
597	GCSEP	GNP END-USE, CONSUMPTION : SERVICES			597	1970=100.	OER73		
594	GICOEP	GNP END-USE, INVESTMENT : CONSTRUCTION, OTHER			594	1970=100.	OER73		
595	GIKREP	GNP END-USE, INVESTMENT : CAPITAL REPAIR			595	1970=100.	OER73	114B	G.4
593	GIMEEP	GNP END-USE, INVESTMENT : MACHINERY-EQUIPMENT			593	1970=100.	OER73		
600	GINFEP	GNP END-USE, INVESTMENT : NEW FIXED CAPITAL			600	1970=100.	OER73		
82	GINVEP	ESTABLISHED PRICES, GNP END USE, INVESTMENT			82	1970=100.0	730ER25		
91	GINVFC	FACTOR COST, GNP END USE, INVESTMENT			91	1970=100.0	730ER27		
596	GIRDEP	GNP END-USE, INVESTMENT : CIVIL R&D			596	1970=100.	OER73		
589	GNP	GNP AT ESTABLISHED PRICES (1970 OER MOVED)			589	B RUBLES	TRAN	025I	G.3
78	GNPAEP	ESTABLISHED PRICES, GNP, AGRICULTURE			78	1970=100.0	730ER25		
87	GNPAFC	FACTOR COST, GNP, AGRICULTURE			87	1970=100.0	730ER27		
587	GNPA	GNP AT ESTABLISHED PRICES, AGRICULTURAL (1970 OER MOVED)			587	B RUBLES	TRAN	22B	G.2
77	GNPCEP	ESTABLISHED PRICES, GNP, CONSTRUCTION			77	1970=100.0	730ER25		
86	GNPCFC	FACTOR COST, GNP, CONSTRUCTION			86	1970=100.0	730ER27		
75	GNPEP	ESTABLISHED PRICES, GNP			75	1970=100.0	730ER25		
84	GNPFC	FACTOR COST, GNP			84	1970=100.0	730ER27		
404	GNPGEP	ESTABLISHED PRICES, GNP, GOVERNMENT, TRADE, SERVICES, ETC			404	1970=100	TRAN	079D	X.4
76	GNPIEP	ESTABLISHED PRICES, GNP, INDUSTRY			76	1970=100.0	730ER25		
85	GNPIFC	FACTOR COST, GNP, INDUSTRY			85	1970=100.0	730ER27		
551	GNPNA	NON AGRIC GNP IDENTITY (1970 WEIGHTS)			551	B RUBLES	OER73	088I	G.1
508	GNPNA	GNP AT ESTABLISHED PRICES, NON AGRICULTURAL (1970 OER MOVED)			508	B RUBLES	TRAN		
80	GNPOEP	ESTABLISHED PRICES, GNP, OTHER (TRADE, TRANSPORT, COMMUNICATIONS)			80	1970=100.0	730ER25		
89	GNPOFC	FACTOR COST, GNP, OTHER (TRADE, TRANSPORT, COMMUNICATIONS)			89	1970=100.0	730ER27		
79	GNPSEP	ESTABLISHED PRICES, GNP, SERVICES			79	1970=100.0	730ER25		
88	GNPSFC	FACTOR COST, GNP, SERVICES			88	1970=100.0	730ER27		
602	GRESEN	GNP + IMPORTS - EXPORTS LESS SUM OF END USES			602	B RUBLES	TRAN	178I	G.5

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SERIES	LABEL	DESCRIPTION	QTR	MON ANN	UNITS	SOURCE	VAR#	EQU#
601	GRES	GNP LESS SUM OF END USES		601	B RUBLES	TRAN		
647	GSIMRES	ZEROES TO USE AS ACTUAL VALUES FOR SIMULATION RESIDUAL		647	NONE	IO.C	1791	6.6
826	G16661	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
835	G166610	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
836	G166611	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
837	G166612	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
838	G166613	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
839	G166614	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
840	G166615	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
841	G166616	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
827	G16662	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
828	G16663	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
829	G16664	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
830	G16665	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
831	G16666	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
832	G16667	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
833	G16668	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
834	G16669	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (16 SECTOR)			MRUBLES	TRAN		
810	G5661	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
819	G56610	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
820	G56611	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
821	G56612	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
822	G56613	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
823	G56614	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
824	G56615	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
825	G56616	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
811	G5662	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
812	G5663	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
813	G5664	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
814	G5665	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
815	G5666	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
816	G5667	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
817	G5668	ESTIMATES THROUGH IO TABLE OF END USES BASED ON Y'S (5SECTOR)			MRUBLES	TRAN		
818								
801	G66D1	HIGGINS FINAL DEMAND ESTIMATES IN THEIL CATEGORIES (PRIVATE)			MRUBLES	TRAN		
802	G66D2	HIGGINS FINAL DEMAND ESTIMATES IN THEIL CATEGORIES (PUBLIC)			MRUBLES	TRAN		
557	G661	FINAL DEMAND I-O CATEGORY 1			MRUBLES	TRAN		
558	G662	FINAL DEMAND I-O CATEGORY 2			MRUBLES	TRAN		
559	G663	FINAL DEMAND I-O CATEGORY 3			MRUBLES	TRAN		
374	HELTN	USE OF ELECTRICITY IN INDUSTRY		374	B KW-HRS	NAR KHOZ		
373	HELTR	USE OF ELECTRICITY IN TRANSPORTATION		373	B KW-HRS	NAR KHOZ		
33	I	CHANGE IN INVENTORIES, TOTAL GOODS		33	B. 1937R	TRAN		
349	IA	CAPITAL INVESTMENT IN AGRICULTURE 72R		349	B 1972R	TRAN	1118	I.7
350	IA1	CAPITAL INVESTMENT IN AGRICULTURE, CUR R		350	B CUR R	NAR KHOZ		
246	IASUB2	INDUSTRIAL CONSTRUCTION AND ACQUISITION FOR AGRICULTURE		246	M1969R	M-M		
247	IASUB3	CONSTRUCTION FOR LIVESTOCK		247	M1969R	M-M		
248	IASUB4	WATER CONSERVATION CONSTRUCTION		248	M1969R	M-M		
249	IASUB5	ELECTRIFICATION OF AGRICULTURE		249	M1969R	M-M		
250	IASUB6	LONG TERM PLANTINGS		250	M1969R	M-M		
251	IASUB7	GENERAL TOTAL OF INDUSTRIAL OBJECTS IN AGRICULTURE		251	M1969R	M-M		

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DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
352	IC&	CAPITAL INVESTMENT IN CONSTRUCTION, CUR R			352	B CUR R	NAR KHOZ		
151	ICFEA	FIXED CAPITAL FORMATION IN CONSTANT PRICES, CMEA			151	1969=100.0	STUNCTAD		
262	ICRUB	CAPITAL INVESTMENT IN CONSTRUCTION			262	B RUBLES	NARKHOZ	070B	I.2
463	CLT28	LOG TIME TREND 1928=0			463	NONE	TRAN	049E	
462	IC28	TIME TREND,1928=1			462	NONE	TRAN		
382	CT50	TIME VARIABLE WITH 1950=1 AND 1973=24			382	NONE	NONE	055E	
340	IFAB	AGRICULTURE, BUDGET			340	B CUR R	CUR DIG		
339	IFAG	AGRICULTURE, STATE AND KOLKHOZY			339	B CUR R	CUR DIG		
500	IFAJ	FINANCING OF INDUSTRY AND CONSTRUCTION			500	B RUBLES	TRAN	122I	I.8
342	IFAK	CAPITAL INVESTMENTS FOR AGRICULTURAL PRODUCTION			342	B CUR R	CUR DIG		
341	IFAP	AGRICULTURE, PROFITS AND OTHER FUNDS			341	B CUR R	CUR DIG		
344	IFHK9	RESIDENTIAL AND COOPERATIVE HOUSING			344	B CUR R	CUR DIG	121E	
336	IFIB	INDUSTRY AND CONSTRUCTION, BUDGET			336	B CUR R	CUR DIG		
335	IFIN9	INDUSTRY AND CONSTRUCTION			335	B CUR R	CUR DIG	118E	
337	IFIP	INDUSTRY AND CONSTRUCTION, PROFITS, AMORT., ETC.			337	B CUR R	CUR DIG		
334	IFNK	FINANCING OF THE NATIONAL ECONOMY, PRODUCTIVE SECTORS			334	B CUR R	CUR DIG		
343	IFSC9	SOCIAL AND CULTURAL MEASURES			343	B CUR R	CUR DIG	120E	
495	IFTOT	FINANCING, NATIONAL ECONOMY			495	B.RUBLES	TRAN		
338	IFTR9	TRANSPORTATION AND COMMUNICATION			338	B CUR R	CUR DIG	119E	
37	IHC	CHANGE IN INVENTORIES, ON HAND, CONS. GOODS INDS.			37	B. 1937R	TRAN		
428	IHS	INVESTMENT IN HOUSING, ADJ TO 1970 PRICES			428	B RUBLES	NARKHOZ	083B	I.4
39	IHT	CHANGE IN INVENTORIES, ON HAND, DOMESTIC TRADE			39	B. 1937R	TRAN		
347	IIN	CAPITAL INVESTMENT IN INDUSTRY 72R			347	B 72R	NARKHOZ	064B	I.1
348	IIN&	CAPITAL INVESTMENT IN INDUSTRY, CUR R			348	B CUR R	NAR KHOZ		
34	IL	CHANGE IN INVENTORIES, LIVESTOCK			34	B. 1937R	TRAN		
35	IN	CHANGE IN INVENTORIES, NON AGRIC.			35	B. 1937R	TRAN		
583	INA	INVESTMENT NONAGRICULTURAL			583	B.RUBLES	TRAN	037I	I.6
345	INK	CAPITAL INVESTMENT IN NATIONAL ECONOMY (INCLUDING KOLKHOZY), 72 R			345	B 72 R	NAR KHOZ		
346	INK&	CAPITAL INVESTMENT IN NATIONAL ECONOMY (INCLUDING KOLKHOZY), CUR R			346	B CUR R	NAR KHOZ		
36	INN	CHANGE IN INVENTORIES, NON AGRIC. NON RESID.			36	B. 1937R	TRAN		
471	INPROD	INVESTMENT, PRODUCTIVE			471	B.RUBLES	TRAN		
481	INIC	PERCENTAGE NONAGRICULTURAL INVESTMENT, CONSTRUCTION			481	NONE	TRAN	092I	
643	INIH9	PERCENTAGE NONAGRIC INVESTMENT,HOUSING			643	NONE	TRAN	051E	
479	INII	PERCENTAGE NON AGRICULTURAL INVESTMENT, INDUSTRY			479	NONE	TRAN	091I	
644	INIS9	PERCENTAGE NON AGRICULTURAL INVESTMENT, SERVICES			644	NONE	TRAN	117E	
38	ISC	CHANGE IN INVENTORIES, SHIPPED, CONS. GOODS INDS.			38	B. 1937R	TRAN		
371	ISER	CAPITAL INVESTMENT IN SERVICES 72R			371	B RUBLES	NARKHOZ	086B	I.5
372	ISER&	CAPITAL INVESTMENT IN SERVICES, CUR R			372	B CUR R	NAR KHOZ		
40	IST	CHANGE IN INVENTORIES, SHIPPED, DOMESTIC TRADE			40	B. 1937R	TRAN		
544	IS70NTA	INVENTORY STOCK,END YEAR AT 1970 PRICES,NON-TRADE,NON-AGRIC			544	B 1970 R	TRAN	174I	I.13
541	IS70T	INVENTORY STOCK,END YEAR AT 1970 PRICES,DOMESTIC TRADE			541	B 1970 R	TRAN	173I	I.12
470	ITOTAL	INVESTMENT, NATIONAL ECONOMY			470	B RUBLES	TRAN	093I	I.9
351	ITR&	CAPITAL INVESTMENT IN TRANSPORTATION AND COMMUNICATIONS, CUR R			351	B CUR R	NAR KHOZ		
259	ITRUB	CAPITAL INVESTMENT IN TRANS X COMMUN			259	B RUBLES	NARKHOZ	070B	I.3
472	IUPROD	INVESTMENT, UNPRODUCTIVE			472	B.RUBLES	TRAN		
546	I70NTA	CHANGE IN INV. STOCK,END YEAR AT 1970 PRICES,NON-TRADE NON-AGRIC			546	B 1970 R	TRAN	172B	I.11
545	I70T	CHANGE IN INV. STOCK,END YEAR AT 1970 PRICES,DOMESTIC TRADE			545	B 1970 R	TRAN	171B	I.10
435	JPS9	SUM OF DEVIATIONS FROM MONTHLY PRECIPITATION VALUES			435	CM	INS	102E	
156	JTPK	TOTAL PASSENGER TRANSPORT			156	B PASS-KM	SVYAZ19		
157	JTRUB	GROWTH OF TOTAL FREIGHT TRAFFIC			157	M R	70JEC42		

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DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VARN	EQUN
155	UTTK	TOTAL TRANSPORTATION			155	B TON-KM	SVYA217		
611	UTW9	WEATHER INDEX, WINTER TEMP INDEX FOR SOUTHERN UKRAINE			611	NONE	D-G	104E	
228	KA	AGRICULTURAL INPUTS, FIXED CAPITAL			228	B1955R	M-P		
469	KABF	BASIC FUNDS, AGRICULTURE (INC. LIVESTOCK) JAN. 1, 1955 PRICES			469	B.RUBLES	NKHOZ		
66	KAI	INDEX OF AGRICULTURAL INPUTS, FIXED CAPITAL			66	1965=100.0	B		
552	KAIR	AGRICULTURAL FIXED CAPITAL (MEAN YEAR 1955 PRICES)			552	B RUBLES	DIAMOND	110B	K.14
260	KCBF	TEMPO OF BASIC FUNDS IN CONSTRUCTION SECTOR (END OF YEAR)			260	1940=100.0	NAR KHOZ		
255	KCBUL	CONSTRUCTION MACHINES, BULLDOZERS			255	000 PIECES	72NKH495		
256	KCCRN	CONSTRUCTION MACHINES, CRANES			256	000 PIECES	72NKH495		
253	KCEXC	CONSTRUCTION MACHINES, EXCAVATORS			253	000 PIECES	72NKH495		
426	KCOM	BASIC FUNDS IN COMMERCE, JANUARY 1, 1955 PRICES			426	B. RUBLES	NAR KHOZ		
464	KCR	BASIC FUNDS, CONSTRUCTION (JAN 1, 1955 PRICES)			464	B RUBLES	TRAN	068I	K.4
261	KCRUB	BASIC FUNDS IN CONSTRUCTION SECTOR (JAN 1)			261	B CUR R	NAR KHOZ		
254	KCSCR	CONSTRUCTION MACHINES, SCRAPERS			254	000 PIECES	72NKH495		
153	KDOS$	DEBT OUTSTANDING, END OF YEAR			153	M$US	73JEC702		
30	KF	NET FIXED CAPITAL STOCK, TOTAL			30	B. 1937R	M-P		
4	KFA	NET FIXED CAPITAL, AVAILABLE, TOTAL			4	B. 1937R	M-P		
8	KFANN	NET FIXED CAPITAL, AVAILABLE, NON AGRIC., NON RESID.			8	B. 1937R	M-P		
6	KFAN	NET FIXED CAPITAL, AVAILABLE, NON AGRIC.			6	B. 1937R	M-P		
31	KFN	NET FIXED CAPITAL STOCK, NON AGRIC.			31	B. 1937R	M-P		
32	KFNN	NET FIXED CAPITAL STOCK, NON AGRIC., NON RESID.			32	B. 1937R	M-P		
5	KFP	NET FIXED CAPITAL, IN PROGRESS, TOTAL			5	B. 1937R	M-P		
9	KFPNN	NET FIXED CAPITAL, IN PROGRESS, NON AGRIC. NON RESID.			9	B. 1937R	M-P		
7	KFPN	NET FIXED CAPITAL, IN PROGRESS, NON AGRIC.			7	B. 1937R	M-P		
152	KGOLD$9	GOLD RESERVES,USSR			152	M$US	73JEC702	24E	
509	KHA	ADJUSTED BASIC FUNDS, HOUSING (JAN 1, 1955 PRICES)			509	B RUBLES	TRAN	080I	K.11
427	KHBF	BASIC FUNDS IN HOUSING (JAN 1, 1955 PRICES)			427	B RUBLES	NARKHOZ	081I	K.10
355	KHR9	HOUSING STOCK RURAL			355	M SQ MET	73JEC422	031E	
353	KHU9	HOUSING STOCK URBAN			353	M SQ MET	73JEC422	030E	
507	KIA	ADJUSTED BASIC FUNDS,INDUSTRY JAN 1,1955 PRICES			507	B RUBLES	TRAN	060I	K.2
165	KICH	CAPITAL STOCK, CHEMICALS			165	B1955R	CONN 70		
164	KICM	CAPITAL STOCK, CONSTRUCTION MATERIALS			164	B1955R	CONN 70		
159	KICP	CAPITAL STOCK, COAL PRODUCTS			159	B1955R	CONN 70		
158	KIEP	CAPITAL STOCK, ELECTRIC POWER			158	B1955R	CONN 70		
161	KIFM	CAPITAL STOCK, FERROUS METALS			161	B1955R	CONN 70		
163	KIFP	CAPITAL STOCK, FOREST PRODUCTS			163	B1955R	CONN 70		
506	KIH629	BASIC FUNDS ADJUSTMENT FOR 1962I-H TRANSFER OF HOUSING CAPITAL			506	B RUBLES	TRAN	066E	
170	KIMAT	CAPITAL STOCK, MATERIALS			170	B1955R	CONN 70		
166	KIMBMW	CAPITAL STOCK, MACHINE BUILDING AND METAL WORKING			166	B1955R	CONN 70		
162	KINF	CAPITAL STOCK, NONFERROUS METALS			162	B1955R	CONN 70		
168	KIPF	CAPITAL STOCK, PROCESSED FOODS			168	B1955R	CONN 70		
160	KIPP	CAPITAL STOCK, PETROLEUM PRODUCTS			160	B1955R	CONN 70		
224	KIR8	INVENTORIES, RETAIL			224	B R	NAR KHOZ		
167	KISG	CAPITAL STOCK, SOFT GOODS			167	B1955R	CONN 70		
169	KITOT	CAPITAL STOCK, TOTAL INDUSTRY			169	B 1955R	CONN.70	061I	K.1
505	KIT589	BASIC FUNDS ADJUSTMENT FOR 1958 I-T TRANSFER OF RR CAPITAL (AT DEC 31)			505	B RUBLES	TRAN	065E	
94	KIW	INDUSTRIAL CAPITAL			94	1940=100.0	70WT2NN		
225	KIW18	INVENTORIES, WHOLESALE			225	B R	NAR KHOZ		
226	KIW28	INVENTORIES, WHOLESALE INCL. FINISHED TEXTILES, TOBACCO, ETC.			226	B R	NAR KHOZ		
154	KNCR$	NET CREDITS (DRAWINGS, REPAYMENTS, INTEREST)			154	M$US	73JEC702		

FINAL DATABANK LISTING ALPHABETICAL

AUGUST 30,1974

D O C U M E N T A T I O N

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
512	KNUA	NET CHANGE IN BASIC FUNDS, AGRICULTURE			512	B RUBLES	TRAN		
514	KNCC	NET CHANGE IN BASIC FUNDS, CONSTRUCTION			514	B RUBLES	TRAN	069B	K.5
516	KNUH	NET CHANGE IN BASIC FUNDS,HOUSING			516	B RUBLES	TRAN	082B	K.13
511	KNUI	NET CHANGE IN BASIC FUNDS, INDUSTRY			511	B RUBLES	TRAN	062B	K.3
515	KNUS	NET CHANGE IN BASIC FUNDS, TRADE AND SERVICES			515	B RUBLES	TRAN	085B	K.12
513	KNUT	NET CHANGE IN BASIC FUNDS, TRANS & COMMUN.			513	B RUBLES	TRAN	077B	K.8
487	KPPOD	BASIC FUNDS, PRODUCTIVE (JAN.1; 1955 PRICES)			487	B.RUBLES	TRAN		
425	KS	UNPRODUCTIVE BASIC FUNDS, JANUARY 1, 1955 PRICES			425	B. RUBLES	NAR KHOZ		
2	KSN	NET CAPITAL STOCK, NONAGRIC.			2	B. 1937R	K-P		
510	KSNH	BASIC FUNDS, TRADE AND SERVICES (JAN.1;1955 PRICES)			510	B RUBLES	TRAN		
3	KSNN	NET CAPITAL STOCK, NONAGRIC.NONRESID.			3	B. 1937R	K-P		
547	KST	BASIC FUNDS IN SERVICES AND TRADE (JAN 1 ,1955 PRICES)			547	B RUBLES	TRAN	087I	K.9
508	KTA	ADJUSTED BASIC FUNDS, TRANSPORT AND COMMUNICATION (JAN 1,1955 PRICES)			508	B RUBLES	TRAN	074I	K.7
257	KTEF	TEMPO OF BASIC FUNDS IN TRANSPORTATION AND COMMUNICATION (END OF YEAR)			257	1950=100.0	NAR KHOZ		
423	KTCUS	RAILROAD CAR UTILIZATION, AVE 24HR DISTANCE PER FREIGHT CAR			423	KM/24HR	SVYAZ103	073B	K.15
486	KTOTAL	BASIC FUNDS, TOTAL (JAN.1 1955 PRICES)			486	B.RUBLES	TRAN		
483	KTR	BASIC FUNDS, TRANS & COMM JAN 1,1955 PRICES			483	B RUBLES	TRAN	076I	K.6
258	KTLUB	BASIC FUNDS IN TRANSPORTATION AND COMMUNICATION (JAN 1)			258	B CUR R	NAR KHOZ		
422	KTTRK	RAILROAD TRACK OPERATED (FIRST MAIN TRACK),END OF YEAR			422	000 KMS	HUNTER		
446	KURK	UNCOMPLETED CONSTRUCTION(END YEAR)AT FACTOR COST; B.RUBLES)			446	B.RUBLES	NKHOZ.		
488	KUFROD	BASIC FUNDS, UNPRODUCTIVE (JAN.1; 1955 PRICES)			488	B.RUBLES	TRAN		
447	KUFR	UNCOMPLETED CONST.,PRODUCTIVE(END YEAR; FACTOR COST; B.RUBLES			447	B.RUBLES	NKHOZ.		
440	KWA	WORKING CAPITAL IN AGRICULTURE			440	B CUR R	NAR KHOZ		
441	KWAL9	PERCENT OF KWA: LIVESTOCK BEING FATTENED & YOUNG LIVESTOCK			441	PERCENT	NARKHOZ	140E	
215	KWS1	SAVINGS-BANK ACCOUNTS, TOTAL DEPOSITS, TOTAL			215	B R	NAR KHOZ		
221	KWSA	SAVINGS-BANK ACCOUNTS, AVERAGE SIZE, TOTAL			221	R	NAR KHOZ		
218	KWSN	SAVINGS-BANK ACCOUNTS, NUMBER, TOTAL			218	MIL.	NAR KHOZ		
223	KWSRA	SAVINGS-BANK ACCOUNTS, AVERAGE SIZE, RURAL			223	R	NAR KHOZ		
220	KWSRN	SAVINGS-BANK ACCOUNTS, NUMBER, RURAL			220	MIL	NAR KHOZ		
217	KWSRS	SAVINGS-BANK ACCOUNTS, TOTAL DEPOSITS, RURAL			217	B R	NAR KHOZ		
222	KWSUA	SAVINGS-BANK ACCOUNTS, AVERAGE SIZE, URBAN			222	R	NAR KHOZ		
219	KWSUN	SAVINGS-BANK ACCOUNTS, NUMBER, URBAN			219	MIL	NAR KHOZ		
216	KWSUS	SAVINGS-BANK ACCOUNTS, TOTAL DEPOSITS, URBAN			216	B R	NAR KHOZ		
113	MAT1	IMPORTS, OTHER NON-CMEA COMMUNIST, TOTAL			113	MSUS	73JEC697		
111	MCT1	IMPORTS, CHINA, TOTAL			111	MSUS	73JEC697		
172	MDCTS	IMPORTS, CMEA, TOTAL			172	MSUS	IND D-MK		
174	MDLTS	IMPORTS, LDC'S, TOTAL			174	MSUS	IND D-MK		
175	MDNTS	IMPORTS, DC'S, TOTAL			175	MSUS	IND D-MK		
173	MDOTS	IMPORTS, OTHER CP'S, TOTAL			173	MSUS	IND D-MK		
171	MDYTS	IMPORTS, YUGOSLAVIA, TOTAL			171	MSUS	IND D-MK		
107	MEIS	IMPORTS, CMEA, MACHINERY AND EQUIPMENT			107	MSUS	73JEC710		
140	MEMS	IMPORTS, CMEA, MACHINERY AND MANUFACTURES			140	MSUS	TRAN		
109	MEFS	IMPORTS, CMEA, CONSUMER GOODS, FOOD			109	MSUS	73JEC710		
108	MEMS	IMPORTS, CMEA, METALS AND MANUFACTURES			108	MSUS	73JEC710		
137	MEOS	IMPORTS, CMEA, OTHER (EX. FOOD, MACHINERY AND MANUFACTURES)			137	MSUS	TRAN		
106	MELTS	IMPORTS, CMEA TOTAL			106	MSUS	73JEC706	001R	M.1
117	MIMS	IMPORTS, DEVELOPED WEST, MACHINERY AND EQUIPMENT			117	MSUS	73JEC701		
141	MICMS	IMPORTS, DEVELOPED WEST, MACHINERY AND MANUFACTURE			141		TRAN	7R	M.4
118	MIMS	IMPORTS, DEVELOPED WEST, METALS AND MANUFACTURES			118	MSUS	73JEC701		
138	MIOS	IMPORTS, DEVELOPED WEST, OTHER (EX.WHEAT,MACHINERY AND MANUFACT.)			138		TRAN	8R	M.5

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DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
116	MITS	IMPORTS, DEVELOPED WEST, TOTAL			116	MSUS	73JEC701		
119	MILS	IMPORTS, DEVELOPED WEST, CONSUMER GOODS, WHEAT AND WHEAT FLOUR			119		73JEC706	006R	M.3
123	MLFS	IMPORTS, LDC'S, CONSUMER GOODS, FOOD			123		73JEC706	10B	M.6
124	MLMS	IMPORTS, LDC'S, METALS AND MANUFACTURES			124	MSUS	73JEC711		
122	MLTS	IMPORTS, LDC'S, TOTAL			122	MSUS	73JEC711		
139	MLUOS	IMPORTS, LDC'S AND UNSPECIFIED, OTHER (EX.FOOD)			139		TRAN	11R	M.7
134	MLUTS	IMPORTS, LDC'S AND UNSPECIFIED, TOTAL			134	MSUS	TRAN		
133	MOTS	IMPORTS, CHINA AND OTHER NON-CMEA COMMUNIST, TOTAL			133		TRAN	004B	M.2
126	MUTS	IMPORTS, UNSPECIFIED, TOTAL			126	MSUS	73JEC711		
100	MWES	IMPORTS, WORLD, MACHINERY AND EQUIPMENT			100	MSUS	73JEC706		
102	MWFS	IMPORTS, WORLD, CONSUMER GOODS, FOOD			102	MSUS	73JEC707		
101	MWMS	IMPORTS, WORLD, METALS AND MANUFACTURES			101	MSUS	73JEC706		
135	MWOS	IMPORTS, WORLD, OTHER (EX. FOOD, MACHINERY AND MANUFACTURES)			135	MSUS	TRAN		
136	MWOWS	IMPORTS, WORLD, OTHER (EX. WHEAT, MACHINERY AND MANUFACTURES)			136	MSUS	TRAN		
396	MWT70	IMPORTS, WORLD, TOTAL, DOMESTIC 1970 PRICES			396	[illegible] 1970 R	TRAN	15I	M.9
103	MWWS	IMPORTS, WORLD, CONSUMER GOODS, WHEAT AND WHEAT FLOUR			103	MSUS	73JEC707		
46	N	EMPLOYMENT, TOTAL			46	000 PERS	73JEC508		
47	NA	EMPLOYMENT, AGRICULTURE			47	000 PERS	73JEC508		
24	NAG	EMPLOYMENT, AGRICULTURAL			24	M. MAN YRS	[illegible]		
68	NAI	INDEX OF AGRICULTURAL INPUTS, LABOR			68	1965=100.0	R		
517	NASC	EMPLOYMENT, AGRICULTURE, STATE AND COLLECTIVE FARMS.			517	000 PERS	TRAN	036D	N.8
357	NAZV	AGRONOMISTS, ZOO TECHNICIANS AND VETERINARIANS			357	000 PER	70JEC9I		
52	NC	EMPLOYMENT, CONSTRUCTION			52	000 PERS	73JEC508	043B	N.5
242	NCET	PERSONNEL, ENGINEERING AND TECHNICAL			242	K PER	NAR KHOZ		
241	NCMTR	PERSONNEL, CONSTRUCTION			241	K PER	NAR KHOZ		
467	NDAY	DAYS WORKED PER AGRICULTURAL EMPLOYEE			467	DAYS/MAN	TRAN		
640	NEAGR	HIGH.ED.ENR : AGRICULTURE AND FORESTRY			640	(000)	NKHOZ		
637	NECGD	HIGH.ED.ENR : CONSUMER GOODS			637	(000)	NKHOZ		
634	NECHE	HIGH.ED.ENR : CHEMICAL			634	(000)	NKHOZ		
638	NECON	HIGH.ED.ENR : CONSTRUCTION			638	(000)	NKHOZ		
629	NEEGY	HIGH.ED.ENR : ENERGY			629	(000)	NKHOZ		
632	NEELT	HIGH.ED.ENR : ELECTRICAL			632	(000)	NKHOZ		
636	NEFGD	HIGH.ED.ENR : FOOD PRODUCTS			636	(000)	NKHOZ		
635	NEFWC	HIGH.ED.ENR : FORESTRY AND WOOD			635	(000)	NKHOZ		
627	NEGEO	HIGH.ED.ENR : GEOLOGY AND EXPLORATION			627	(000)	NKHOZ		
646	NEIND9	HIGH.ED.ENR.: ALL INDUSTRIAL CATEGORIES			646	(000)	NKHOZ	177E	
96	NEIR	INDUSTRIAL ENGINEERING AND ECONOMIC MANPOWER			96	000 PER	72[illegible]		
630	NEMET	HIGH.ED.ENR : METALLURGY			630	(000)	NKHOZ		
631	NEMIB	HIGH.ED.ENR : MACHINE AND INSTRUMENT BUILDING			631	(000)	NKHOZ		
628	NEMIN	HIGH.ED.ENR : MINING			628	(000)	NKHOZ		
633	NERAD	HIGH.ED.ENR : RADIO AND COMMUNICATIONS			633	(000)	NKHOZ		
639	NETRA9	HIGH.ED.ENR : TRANSPORT			639	(000)	NKHOZ	176E	
64	NG	EMPLOYMENT, GOVERNMENT, TRADE, SERVICES, ETC			64	000 PERS	TRAN	042B	N.7
53	NG1	EMPLOYMENT, TRADE, ETC.			53	000 PERS	73JEC508		
54	NG2	EMPLOYMENT, HOUSING, COMMUNAL ECONOMY, PERSONAL SERVICES			54	000 PERS	73JEC508		
55	NG3	EMPLOYMENT, HEALTH SERVICES			55	000 PERS	73JEC508		
56	NG4	EMPLOYMENT, EDUCATION AND CULTURE			56	000 PERS	73JEC508		
57	NG5	EMPLOYMENT, ART			57	000 PERS	73JEC508		
58	NG6	EMPLOYMENT, SCIENCE AND SCIENTIFIC SERVICES			58	000 PERS	73JEC508		
59	NG7	EMPLOYMENT, CREDIT AND INSURANCE ORGANIZATIONS			59	000 PERS	73JEC508		

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DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
60	EG8	EMPLOYMENT, GOVERNMENT ADMINISTRATION			60	000 PERS	73JEC508		
61	EG9	EMPLOYMENT, OTHER			61	000 PERS	73JEC508		
62	EI	EMPLOYMENT, INDUSTRIAL			62	000 PERS	TRAN	0408	N.4
403	EIDY	AVERAGE DAYS WORKED PER YEAR IN INDUSTRY			403	DAYS	FESHBACH		
390	EIET	ENGINEERING-TECHNICAL WORKERS IN INDUSTRY			390	000 MEN	NARKHOZ	0508	N.11
430	EIHDJ	AVERAGE HRS/DAY IN INDUSTRY, ADJUSTED 1960-1965 TO LINEAR STEPS			430	HOURS			
402	EIHD	AVERAGE HOURS WORKED PER WORKING DAY IN INDUSTRY			402	HOURS	FESHBACH		
95	EIW	INDUSTRIAL MAN-HOURS			95	B MAN HRS	70JT2[illegible]		
48	EI1	EMPLOYMENT, INDUSTRY			48	000 PERS	73JEC508		
49	EI2	EMPLOYMENT, FORESTRY			49	000 PERS	73JEC508		
25	EN	EMPLOYMENT, NON AGRIC.			25	M. MAN YRS	N-P		
548	ENAS	EMPLOYMENT, NON AGRIC, NON ARTISAN			548	000 PERS	TRAN	0693	N.3
279	EPAB9	POPULATION, ABLE BODIED AGES (16-59/54)			279	000 PERS	73JEC520	090E	
356	EPOPR	POPULATION RURAL (END YEAR)			356	M PERS	NAR 72.7	029I	N.2
354	EPOPU	POPULATION URBAN (END YEAR)			354	M PERS	NAR 72.7	028U	N.1
446	EPOP9	POPULATION, TOTAL				[illegible]	TRAN	052E	
278	EP16F	POPULATION, AGES 16 AND OVER, FEMALE			278	000 PERS	73JEC520		
277	EP16M	POPULATION, AGES 16 AND OVER, MALE			277	000 PERS	73JEC520		
276	EP16	POPULATION, AGES 16 AND OVER			276	000 PERS	73JEC520		
26	ET	EMPLOYMENT, TOTAL			26	M. MAN YRS	N-P		
63	ET	EMPLOYMENT, TRANSPORTATION			63	OCCPERS	TRAN	041R	N.6
285	ETA	EMPLOYMENT, AGRICULTURAL SECTORS			285	000 PERS	73JEC520	047I	N.10
286	ETAC	EMPLOYMENT, AGRICULTURAL SECTORS, COLLECTIVE FARM			286	000 PERS	73JEC520		
281	ETAF	EMPLOYMENT, ARMED FORCES			281	000 PERS	73JEC520		
287	ETAP	EMPLOYMENT, AGRICULTURAL SECTORS PRIVATE			287	000 PERS	73JEC520	0380	N.9
284	ETAS	EMPLOYMENT, INDEPENDENT ARTISANS			284	000 PERS	73JEC520		
282	ETC	EMPLOYMENT, CIVILIAN			282	000 PERS	73JEC520		
283	ETNA	EMPLOYMENT, NON-AGRICULTURAL SECTORS			283	000 PERS	73JEC520		
280	ETOT	EMPLOYMENT, TOTAL			280	000 PERS	73JEC520		
424	ETSP	NUMBER OF TRANS & COMM SPECIALISTS, END OF YEAR			424	000 MEN	SVYAZ36	0758	N.12
50	ET1	EMPLOYMENT, TRANSPORT			50	000 PERS	73JEC508		
51	ET2	EMPLOYMENT, COMMUNICATIONS			51	000 PERS	73JEC508		
99	IMTS	IMPORTS, WORLD, TOTAL			99	MRUS	73JEC706		
29	E37	1937 MAN YEAR EMPLOYMENT, TOTAL			29	M.37 MANYRS	N-P		
27	E37A	1937 MAN YEAR EMPLOYMENT, AGRIC.			27	M.37 MANYRS	N-P		
28	E37N	1937 MAN YEAR EMPLOYMENT, NON AGRIC.			28	M.37 MANYRS	N-P		
367	FAFC68	PRICE FOOD SOLD TO CONSUMER CO-OPS AT NEGOTIATED PRICES, 1968 WEIGHTS			367	1970=100.0	LKHATAN		
368	FAFC70	PRICE FOOD SOLD TO CONSUMER CO-OPS AT NEGOTIATED PRICES, 1970 WEIGHTS			368	1970=100.	LKHATAN	0590	P.3
369	FAFC	PRICE FOOD SOLD TO CONSUMER CO-OPS AT NEGOTIATED PRICES, CURR YR WTS			369	1970=100.0	LKHATAN		
410	FCFM	PRICE INDEX, EXTRAMURAL COLLECTIVE FARM MARKET			410	1970=100.0	[illegible]		
194	FCPI	CONSUMER PRICE INDEX (1950=100)			194	1950=100.0	73JEC593		
418	FFCC	CONSUMPTION PRICE, FOOD (FROM PIRF & FAFC70)			418	1970=100	TRAN	1291	P.4
417	FFCF	CONSUMPTION PRICE, FOOD (FROM PIRF & PCFM)			417	1970=100.0	TRAN		
407	FIA	INVESTMENT DEFLATOR, AGRICULTURE			407	1972=100.	NARKHOZ	970	P.13
405	PIC	INVESTMENT DEFLATOR, CONSTRUCTION SECTOR			405	1972=1009	NARKHOZ	1018	P.9
364	PIENT	INDEX OF WHOLESALE ENTERPRISE PRICES FOR INDUSTRY			364	1949=100.0	NAR KHOZ		
429	FIHS	INVESTMENT DEFLATOR, HOUSING			429	1972=100.	NARKHOZ	1000	P.12
406	FII	INVESTMENT DEFLATOR, INDUSTRY			406	1972=100.	NARKHOZ	0958	P.8
368	PIR	INDEX OF STATE RETAIL PRICES FOR ALL GOODS			368	1940=100.0	NAR KHOZ		
573	PIRF70	INDEX OF STATE RETAIL PRICES FOR FOOD GOODS (DEFLATED)			573	1970=100	TRAN	1260	P.2

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FINAL DATABANK LISTING ALPHABETICAL

DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
369	PIRF	INDEX OF STATE RETAIL PRICES FOR FOOD GOODS			369	1940=100.0	NAR KHOZ		
370	PIRNF	INDEX OF STATE RETAIL PRICES FOR NON-FOOD GOODS			370	1940=100.0	NAR KHOZ		
409	PIS	INVESTMENT DEFLATOR, SERVICES			409	1972=100.	NARKHOZ	99R	P.11
408	PIT	INVESTMENT DEFLATOR, TRANSPORT AND COMMUNICATION			408	1972=100.	NARKHOZ	98R	P.10
365	PIW	INDEX OF WHOLESALE INDUSTRIAL PRICES			365	1949=100.0	NAR KHOZ		
549	PIWH70	INDEX OF WHOLESALE INDUSTRIAL PRICES, HEAVY INDUSTRY (DEFLATED)			549	1970=100.	TRAN	094R	P.7
366	PIWH	INDEX OF WHOLESALE INDUSTRIAL PRICES HEAVY INDUSTRY			366	1949=100.0	NAR KHOZ		
575	PIWL70	INDEX OF WHOLESALE INDUSTRIAL PRICES LIGHT AND FOOD INDUSTRY (DEFLATED			575	1970=100	TRAN	128R	P.6
367	PIWL	INDEX OF WHOLESALE INDUSTRIAL PRICES LIGHT INDUSTRY & FOOD INDUSTRY			367	1949=100.0	NAR KHOZ		
574	PIWL70	INDEX OF WHOLESALE INDUSTRIAL PRICES (DEFLATED)			574	1970=100.	TRAN		
1	KS	NET CAPITAL STOCK, TOTAL			1	R. 1937R	M-P		
572	PMCM58	IMPORTS, UNIT VALUE INDEX, CRUDE MATERIALS	1	958=100			WEFANEW,PMCM58	.01454	
416	PNF70	CONSUMPTION PRICE, NON-FOOD (FROM PIRNF)			416	1970=100	TRAN	127R	P.1
419	PRC	CONSUMPTION PRICE, TOTAL (FROM PNF&PFCC)			419	1970=100.	TRAN	053I	P.5
436	PRFC2	SUM OF ABSOLUTE VALUE OF DEVIATIONS FROM MONTHLY PRECIPITATION VALUES			436	CM	195		
612	PRUX9	USS RUBLE CONVERSION RATIO			612	RUBLES	NKHOZ	19E	
420	PRF	CONSUMPTION PRICE, FOOD RELATIVE TO TOTAL (PFCC/PRC)			420	1970=1.0	TRAN		
421	PRNF	CONSUMPTION PRICE, NON-FOOD RELATIVE TO TOTAL (PNF/PRC)			421	1970=1.0	TRAN		
536	PSC	INVENTORY PRICES,END YEAR, CONTRACT CONSTRUCTION			536	1970=100.	M-P C-H		
532	PSIC	INVENTORY PRICES,END YEAR, CONSUMER GOODS INDUSTRIES			532	1970=100.	M-P C-H		
531	PSIP	INVENTORY PRICES,END YEAR, PROCESSED FOODS INDUSTRIES			531	1970=100.	M-P C-H		
534	PSP	INVENTORY PRICES,END YEAR, PROCUREMENT			534	1970=100.	M-P C-H		
535	PST	INVENTORY PRICES,END YEAR, DOMESTIC TRADE			535	1970=100.	M-P C-H		
533	PSTC	INVENTORY PRICES,END YEAR, TRANSPORT AND COMMUNICATION			533	1970=100.	M-P C-H		
376	PTM9	SOVIET TRADE WITH WORLD, IMPORTS, OFFICAL PRICE INDEX			376	1970=100.	VN TOR N	026E	
375	PTX9	SOVIET TRADE WITH WORLD, EXPORTS, OFFICAL PRICE INDEX			375	1970=100.	VN TOR N	027E	
570	PWT9	DEFLATOR WORLD TRADE			570	.1958=100 INDEX	WEFAIDE		
439	PXCON9	PRICE DEFLATOR, CONSTRUCTION ACTIVITY			439	1972=100.	NARKHOZ	096E	
569	P01	IMPORTS, PRICE DEFLATOR, FOOD, BEVERAGE, TOBACCO	E 758	1 958=100	INDEX		WEFANEW,P01	.01578	
571	P599	IMPORTS, PRICE DEFLATOR, MANUFACTURED GOODS			571	1958=100 INDEX	WEFAITE		
304	QCHINA9	RELATIONSHIPS WITH CHINA			304	DUMMY	C-H		
431	QPL1	FIVE-YEAR PLAN DUMMY (1954-55,63-65,69-70,74-75)			431	NONE	D-G		
432	QPL5	FIVE YEAR PLAN DUMMY (54-57,63-66,69-71,74-76)			432	NONE	D-G	071E	
433	QPL7	FIVE YEAR PLAN DUMMY (1954-57, 62-64, 69-71,74-76)			433	NONE	D-G	063E	
550	QSH65	DUMMY VARIABLE FOR 1954-1964 (PRIVATE AGRICULTURAL EMPLOYMENT)			550	NONE	C-H	188E	
561	QSH68	SHIFT VARIABLE FOR 1968 ON =1			561	NONE	D-G	125E	
604	QWREF	DUMMY VARIABLE FOR 1967-1969 (WAGE REFORM)			604	NONE	C-H	109E	
562	Q55	DUMMY VARIABLE FOR 1955			562	NONE	NONE	175E	
622	Q5859	DUMMY VARIABLE FOR 1958-59			622	NONE	NONE	163E	
620	Q5861	DUMMY VARIABLE FOR 1958-61			620	NONE	NONE	161E	
619	Q59	DUMMY VARIABLE FOR 1959			619	NONE	NONE	160E	
603	Q61	DUMMY VARIABLE FOR 1961			603	NONE	NONE	159E	
468	Q62	DUMMY VARIABLE FOR 1962			468	NONE	NONE	064E	
621	Q6265	DUMMY VARIABLE FOR 1962-65			621	NONE	NONE	162E	
626	Q63	DUMMY VARIABLE FOR 1963			626	NONE	NONE	167E	
642	Q6368	DUMMY VARIABLE FOR 1963-68			642	NONE	NONE	169E	
623	Q6467	DUMMY VARIABLE FOR 1964-67			623	NONE	NONE	164E	
485	Q65	DUMMY VARIABLE FOR 1965			485	NONE	NONE	056E	
648	Q6567	DUMMY VARIABLE FOR 1965-1967			640	NONE	NONE	181E	
577	Q67	DUMMY VARIABLE FOR 1967			577	NONE	NONE	141E	

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D O C U M E N T A T I O N

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
624	D6768	DUMMY VARIABLE FOR 1967-68			624	NONE	NONE		165E
520	D68	DUMMY VARIABLE FOR 1968, INDUSTRY WAGE			520	NONE	TRAN		054E
645	D69CN	DUMMY VARIABLE FOR 1969 ON			645	NONE	NONE		180E
625	D70	DUMMY VARIABLE FOR 1970			625	NONE	NONE		166E
498	FFAG	PERCENTAGE FINANCING, AGRICULTURE			498	NONE	TRAN		
500	FFHC	PERCENTAGE FINANCING, HOUSING AND COLLECTIVE			500	NONE	TRAN		
496	FFIN	PERCENTAGE FINANCING, INDUSTRY			496	NONE	TRAN		
499	FFSC	PERCENTAGE FINANCING, SOCIAL-CULTURAL			499	NONE	TRAN		
497	FFTH	PERCENTAGE FINANCING, TRANSPORT AND COMMUNICATIONS			497	NONE	TRAN		
482	FIG	PERCENTAGE NON AGRICULTURAL INVESTMENT, TRADE SERVICES AND HOUSING			482	NONE	TRAN		
443	FINKC	PERCENTAGE OF CAPITAL INVESTMENT,CONSTRUCTION-INSTALLATION (69 PRICES)			443	NONE	FK72,475		
444	FINKM	PERCENTAGE OF CAPITAL INVESTMENT, MACHINERY-EQUIPMENT (1969 PRICES)			444	NONE	FK72,475		
445	FINKR	PERCENTAGE OF CAPITAL INVESTMENT,CAPITAL REPAIR (1969 PRICES)			445	NONE	FK72,475		
474	FINVA	PERCENTAGE INVESTMENT, AGRICULTURE			474	NONE	TRAN		
476	FINVC	PERCENTAGE INVESTMENT, CONSTRUCTION			476	NONE	TRAN		
478	FINVH	PERCENTAGE INVESTMENT, HOUSING			478	NONE	TRAN		
473	FINVI	PERCENTAGE INVESTMENT, INDUSTRY			473	NONE	TRAN		
477	FINVS	PERCENTAGE INVESTMENT, TRADE AND SERVICES			477	NONE	TRAN		
475	FINVT	PERCENTAGE INVESTMENT, TRANSPORT AND COMMUNICATIONS			475	NONE	TRAN		
480	FNIT9	PERCENTAGE NON AGRICULTURAL INVESTMENT, TRANSPORT AND COMMUNICATION			480	NONE	TRAN		048E
490	FKA	PERCENTAGE BASIC FUNDS, AGRICULTURE			490	NONE	TRAN		
492	FKC	PERCENTAGE BASIC FUNDS, CONSTRUCTION			492	NONE	TRAN		
494	FKH	PERCENTAGE BASIC FUNDS, HOUSING			494	NONE	TRAN		
489	FKI	PERCENTAGE BASIC FUNDS, INDUSTRY			489	NONE	TRAN		
493	FKS	PERCENTAGE BASIC FUNDS, TRADE AND SERVICES			493	NONE	TRAN		
491	FKT	PERCENTAGE BASIC FUNDS, TRANSPORT AND COMMUNICATIONS			491	NONE	TRAN		
614	KTLP9	TAX RATE PROFITS			614	NONE	NONE		149E
618	KTSE9	TAX RATE, ADJUSTMENT, SOCIAL DEDUCTIONS			618	NONE	NONE		154E
576	KTT	TURNOVER TAX RATE CALCULATION TTS/ATRADE+1.38 (SMOOTHED)			576	%	C-H		
578	KTTD9	DEVIATIONS FROM TREND OF KTT			578	%	TRAN		137E
616	KTTC9	TAX RATE, ADJUSTMENT, OTHER SOCIAL SECTOR			616	NONE	NONE		157E
617	KTTP9	TAX RATE, ADJUSTMENT, POPULATION			617	NONE	NONE		159E
615	KTTT9	TAX RATE, ADJUSTMENT, TURNOVER TAX			615	NONE	NONE		156E
464	LUPOP	RATIO OF URBAN TO TOTAL POPULATION			464	NONE	TRAN		
501	RZPR	PERCENTAGE PROFITS RETAINED FOR INVESTING,ALLSTATE ENTERPRISES			501	NONE	NARKHOZ		
10	S	INVENTORY STOCK, TOTAL GOODS			10	B. 1937R	P-P		
529	SA	INVENTORY STOCK,END YEAR,CURRENT PRICES, TOTAL			529	B RUBLES	TRAN		
526	SAS	INVENTORY STOCK,END YEAR,CURRENT PRICES, STATE AGRICULTURE			529	M RUBLES	P-P C-H		
434	SAI9	INDEX OF AGRICULTURAL INPUTS, SOWN AREA			434	1965=100.			170E
526	SCS	INVENTORY STOCK,ENDYEAR,CURRENT PRICES, CONTRACT CONSTRUCTION			526	M RUBLES	P-P C-H		
331	SFCSS	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, SUBTOTAL			331	M R	NAR KHOZ		
333	SFCT	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, TOTAL			333	M R	NAR KHOZ		
307	SFC10	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, FLOUR AND GRAIN			307	000 TONS	NAR KHOZ		
323	SFC10S	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, FLOUR AND GRAIN			323	M R	NAR KHOZ		
308	SFC11	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, BREAD, ETC.			308	000 TONS	NAR KHOZ		
324	SFC11S	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, BREAD, ETC.			324	M R	NAR KHOZ		
309	SFC12	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, GROATS AND LEGUMES			309	000 TONS	NAR KHOZ		
325	SFC12S	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, GROATS AND LEGUMES			325	M R	NAR KHOZ		
310	SFC13	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, POTATOES			310	000 TONS	NAR KHOZ		
326	SFC13S	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, POTATOES			326	M R	NAR KHOZ		

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D O C U M E N T A T I O N

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR# EQU#
311	SFC14	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, VEGETABLES			311	000 TONS	NAR KHOZ	
327	SFC14A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, VEGETABLES			327	M R	NAR KHOZ	
312	SFC15	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, FRUITS AND MELONS			312	000 TONS	NAR KHOZ	
328	SFC15A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, FRUITS AND MELONS			328	M R	NAR KHOZ	
313	SFC16	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, WINE, GRAPE AND FRUIT			313	000DCALTR	NAR KHOZ	
329	SFC16A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, WINE, GRAPE AND FRUIT			329	M R	NAR KHOZ	
330	SFC17A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, OTHER			330	M R	NAR KHOZ	
332	SFC16A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, SUGAR			332	M R	NAR KHOZ	
298	SFC1	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, MEAT AND POULTRY			298	000 TONS	NAR KHOZ	
314	SFC1A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, MEAT AND POULTRY			314	M R	NAR KHOZ	
299	SFC2	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, SAUSAGE			299	000 TONS	NAR KHOZ	
315	SFC2A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, SAUSAGE			315	M R	NAR KHOZ	
300	SFC3	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, FISH			300	000 TONS	NAR KHOZ	
316	SFC3A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, FISH			316	M R	NAR KHOZ	
301	SFC4	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, MEAT FATS			301	000 TONS	NAR KHOZ	
317	SFC4A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, MEAT FATS			317	M R	NAR KHOZ	
302	SFC5	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, VEGETABLE OILS			302	000 TONS	NAR KHOZ	
318	SFC5A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, VEGETABLE OILS			318	M R	NAR KHOZ	
303	SFC6	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, OTHER OILS			303	000 TONS	NAR KHOZ	
319	SFC6A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, OTHER OILS			319	M R	NAR KHOZ	
304	SFC7	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, MILK, ETC.			304	000 TONS	NAR KHOZ	
320	SFC7A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, MILK, ETC.			320	M R	NAR KHOZ	
305	SFC8	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, EGGS			305	MILLIONS	NAR KHOZ	
321	SFC8A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, EGGS			321	M R	NAR KHOZ	
306	SFC9	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, HONEY			306	000 TONS	NAR KHOZ	
322	SFC9A	SALE OF FOODSTUFFS TO CONSUMER COOPERATIVES, HONEY			322	M R	NAR KHOZ	
14	SHC	INVENTORY STOCK, ON HAND, CONS. GOODS. INDS			14	B. 1937R	M-P	
16	SHT	INVENTORY STOCK, ON HAND, DOMESTIC TRADE			16	B. 1937R	M-P	
522	SICS	INVENTORY STOCK,END YEAR,CURRENT PRICES, CONSUMER GOODS INDUSTRIES			522	B RUBLES	M-P C-H	
521	SIPA	INVENTORY STOCK,END YEAR,CURRENT PRICES, PRODUCER GOODS INDUSTRIES			521	B RUBLES	M-P C-H	
11	SL	INVENTORY STOCK, LIVESTOCK			11	B. 1937R	M-P	
12	SN	INVENTORY STOCK, NON AGRIC.			12	B. 1937R	M-P	
13	SNN	INVENTORY STOCK, NON AGRIC., NON RESID.			13	B. 1937R	M-P	
530	SNTAA	INVENTORY STOCK,END YEAR,CURRENT PRICES, NOT TRADE,NON AGRICULTURE			530	B RUBLES	TRAN	
527	SOS	INVENTORY STOCK,END YEAR,CURRENT PRICES, OTHER NON-AGRICULTURAL SECTOR			527	B RUBLES	M-P C-H	
524	SPS	INVENTORY STOCK,END YEAR,CURRENT PRICES, PROCUREMENT			524	B RUBLES	M-P C-H	
15	SSC	INVENTORY STOCK, SHIPPED, CONS. GOODS INDS			15	B. 1937R	M-P	
17	SST	INVENTORY STOCK, SHIPPED, DOMESTIC TRADE			17	B. 1937R	M-P	
525	STA	INVENTORY STOCK,END YEAR,CURRENT PRICES, DOMESTIC TRADE			525	B RUBLES	M-P C-H	
523	STCA	INVENTORY STOCK,END YEAR,CURRENT PRICES, TRANSPORT AND COMMUNICATION			523	B RUBLES	M-P C-H	
542	S70C	INVENTORY STOCK,END YEAR AT 1970 PRICES,CONTRACT CONSTRUCTION			542	B 1970 R	TRAN	
538	S70IC	INVENTORY STOCK,END YEAR AT 1970 PRICES,CONSUMER GOODS INDUSTRIES			538	B 1970 R	TRAN	
537	S70IP	INVENTORY STOCK,END YEAR AT 1970 PRICES,PRODUCER GOODS INDUSTRIES			537	B 1970 R	TRAN	
543	S70O	INVENTORY STOCK,END YEAR AT 1970 PRICES,OTHER NON-AGRIC SECTORS			543	B 1970 R	TRAN	
540	S70P	INVENTORY STOCK,END YEAR AT 1970 PRICES,PROCUREMENT			540	B 1970 R	TRAN	
539	S70TC	INVENTORY STOCK,END YEAR AT 1970 PRICES,TRANSPORT AND COMMUNIC			539	B 1970 R	TRAN	
605	TATOT	INDEX ADJUSTED SO 1966=TREML VALUE				TRUBLES	TRAN	
379	TCEMP	COMMUNICATION INDEX BASED UPON EMPLOYMENT DATA			379	1970=100.0	D-G	
378	TCRUB	COMMUNICATION INDEX BASED UPON RUBLE OUTPUT			378	1970=100.0	D-G	
804	TCRUB	INDEX ADJUSTED SO 1966=TREML VALUE				TRUBLES	TRAN	

DOCUMENTATION

SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
451	TDFR	REVENUES, DEDUCTIONS FROM PROFIT, STATE ENTERPRISES			451	B RUBLES	NKHOZ	144R	T.1
437	TEMP19								
438	TEMP2	SUM OF ABSOLUTE VALUE OF DEVIATIONS FROM MONTHLY TEMPERATURE VALUES			438	CENTIGRADE	IMS		
235	TFAP	FREIGHT TRANSPORT, AIR			235	B TON-KM	SVYAZ17		
457	TFDPR	PLAN BUDGET REVENUES, DEDUCTIONS FROM PROFIT,STATE ENTERPRISES			457	B,RUBLES	PRAVDA		
232	TFIW	FREIGHT TRANSPORT, INTERNAL WATERWAY			232	B TON-KM	SVYAZ17		
231	TFMA	FREIGHT TRANSPORT, MARITIME			231	B TON-KM	SVYAZ17		
245	TFMG	FREIGHT TRANSPORT, MOTOR, GENERAL USE			245	B TON-KM	TMSV72		
234	TFMT	FREIGHT TRANSPORT, MOTOR			234	B TON-KM	SVYAZ17		
458	TFOSSR	PLAN BUDGET REVENUES, FROM OTHER SOCIAL ORGANIZATIONS			458	B RUBLES	PRAVDA		
233	TFPL	FREIGHT TRANSPORT, PIPELINE			233	B TON-KM	SVYAZ17		
459	TFPOPR	PLAN BUDGET REVENUES, FROM POPULATION			459	B,RUBLES	PRAVDA		
585	TFRR	PLAN BUDGET REVENUES TOTAL			585	B RUBLES	PRAVDA		
230	TFRR	FREIGHT TRANSPORT, RAILROAD			230	B TON-KM	SVYAZ17		
455	TFSR	PLAN BUDGET REVENUES, SOCIAL SECTOR (CURRENT RUBLES)			455	B,RUBLES	PRAVDA		
456	TFTR	PLAN BUDGET REVENUES, TURNOVER TAX			456	B,RUBLES	PRAVDA		
850	TICH	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
847	TICM	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
843	TICP	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
842	TIFP	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
845	TIFM	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
847	TIFP	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
851	TIGRAW	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
846	TILF	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
848	TIFAP	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
853	TILF	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
844	TIPP	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
852	TISG	Y'S ADJUSTED SO 1966=TREML VALUE				MRUBLES	TRAN		
803	TITOT	INDEX ADJUSTED SO 1966=TREML VALUE				TRUBLES	TRAN		
452	TMCOS	REVENUES, MACHINE-TRACTOR STATIONS AND COOPERATIVE ORGANIZATIONS			452	B,RUBLES	NKHOZ		
586	TOSSR	REVENUES , OTHER SOCIAL SECTORS			586	B RUBLES	PRAVDA	1450	T.3
169	TPD	TOTAL STATE DEDUCTIONS (1973 FIGURES)			169	B RUBLES	73JEC393	1381	T.6
203	TPD'	TOTAL STATE DEDUCTIONS (1966 FIGURES)			203	B R	66JEC526		
641	TPFR9	ADJUSTMENT FOR LOCAL TAXES,ADMISSION FEES, AND LOTTERIES			641	B RUBLES	73JEC	160E	
240	TPAR	PASSENGER TRANSPORT, AIR			240	B PASS-KM	SVYAZ19		
190	TPDTR	DIRECT TAXES (1973 FIGURES)			190	B R	73JEC393		
204	TPDTR'	DIRECT TAXES (1966 FIGURES)			204	B R	66JEC526		
238	TPIW	PASSENGER TRANSPORT, INTERNAL WATERWAY			238	B PASS-KM	SVYAZ19		
192	TPLLR	STATE LOANS (1973 FIGURES)			192	B R	73JEC393		
206	TPLLR'	STATE LOANS (1966 FIGURES)			206	B R	66JEC526		
191	TPLTR	LOCAL TAXES (1973 FIGURES)			191	B R	73JEC393		
205	TPLTR'	LOCAL TAXES (1966 FIGURES)			205	B R	66JEC526		
237	TPMA	PASSENGER TRANSPORT, MARITIME			237	B PASS-KM	SVYAZ19		
239	TPMT	PASSENGER TRANSPORT, MOTOR			239	B PASS-KM	SVYAZ19		
453	TPOPR	REVENUES, POPULATION (INCOME TAXES, STATE BONDS, LOTTERIES ETC)			453	B RUBLES	NKHOZ	1470	T.5
236	TPRR	PASSENGER TRANSPORT, RAILROAD			236	B PASS-KM	SVYAZ19		
449	TRR	STATE BUDGET, TOTAL REVENUES (CURRENT RUBLES)			449	B RUBLES	NKHOZ	1421	T.7
454	TSDR	REVENUES , SOCIAL INSURANCE DEDUCTIONS			454	B RUBLES	NKHOZ	1469	T.4
450	TTR	REVENUES, TURNOVER TAX			450	B RUBLES	NKHOZ	1430	T.2
807	TTRADE	INDEX ADJUSTED SO 1966=TREML VALUE				TRUBLES	TRAN		

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SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQU#
0C6	TT7R	INDEX ADJUSTED SO 1966=TREND VALUE				TRUBLES	TRAN		
377	TT70	TRANSPORTATION INDEX, 1970 RUBLE COST WEIGHTS			377	1970=100.0	D-G		
263	WA	WAGES, TOTAL			263	RUBLES	70JEC82		
519	WASC8	WAGES,AGRICULTURE, STATE AND COLLECTIVE FARMS			519	RUBLES	TRAN	033B	W.2
265	WC8	WAGES, CONSTRUCTION			265	RUBLES	70JEC82	046B	W.3
401	WG8	WAGES, COMMERCE,TRADE,SERVICES ECT.			401	RUBLES	TRAN	045B	W.5
269	WG18	WAGES, TRADE, ETC.			269	RUBLES	70JEC82		
270	WG28	WAGES, HOUSING-COMMUNAL ECONOMY			270	RUBLES	70JEC82		
271	WG38	WAGES, HEALTH SERVICES			271	RUBLES	70JEC82		
272	WG48	WAGES, EDUCATION AND CULTURE			272	RUBLES	70JEC82		
273	WG68	WAGES, SCIENCE AND SCIENTIFIC SERVICES			273	RUBLES	70JEC82		
274	WG78	WAGES, CREDIT AND INSURANCE INSTITUTIONS			274	RUBLES	70JEC82		
275	WG88	WAGES, GOVERNMENT AND ADMINISTRATION			275	RUBLES	70JEC82		
264	WI8	WAGES, INDUSTRY			264	RUBLES	70JEC82	032B	W.1
266	WSA8	WAGES, STATE FARMS AND SUBSIDIARY STATE AGRICULTURAL ENTERPRISES			266	RUBLES	70JEC82		
145	WT	WORLD TRADE, CONSTANT PRICES			145	B55$US	WHAR650		
400	WT8	WAGES, TRANSPORTATION AND COMMUN.			400	RUBLES	TRAN	044B	W.4
146	WT$	WORLD TRADE, CURRENT PRICES			146	B$US	WHAR650		
147	WTD	WORLD TRADE, DEFLATOR			147	1955=1	WHAR650		
142	WTG$	WORLD TRADE, GOODS, CURRENT PRICES			142	B$US	WHAR650		
143	WTA9	WORLD TRADE VOLUME			143	1958=100	UEFAUEW	23E	
267	WT18	WAGES, TRANSPORT			267	RUBLES	70JEC82		
268	WT28	WAGES, COMMUNICATIONS			268	RUBLES	70JEC82		
501	XAC	AGRICULTURAL PRODUCTION, CROPS			501	M RUBLES	OER		
70	XACI	INDEX OF AGRICULTURAL PRODUCTION, CROPS			70	1965=100.0			
252	XACTUAL9	VALUE OF FEED FED TO LIVESTOCK			252	MIL64R	SRI	116E	
399	XADTC	AGRICULTURAL PRODUCTION, CUMULATIVE DEPARTURE FROM TREND			399	M RUBLES	TRAN		
69	XAI	INDEX OF AGRICULTURAL PRODUCTION, TOTAL			69	1965=100.0			
502	XAL	AGRICULTURAL PRODUCTION, ANIMAL			502	M RUBLES	OER		
71	XALI	INDEX OF AGRICULTURAL PRODUCTION, LIVESTOCK			71	1965=100.0			
503	XATOT	AGRICULTURAL PRODUCTION TOTAL			503	M RUBLES	OER	112B	X.5
610	XATPK	TOTAL AGRICULTURAL OUTPUT, PEAK TO PEAK SMOOTHING OF XATOT			610	B RUBLES	D-G		
383	XAT99	AGRICULTURAL PRODUCTION, TREND 1955-1972			383	M RUBLES	TRAN	21E	
440	XCKOL	CONSTRUCTION BY KOLKHOZY,1969 PRICES			440	B.RUBLES	KK72.61		
243	XCMOB	CONSTRUCTION ACTIVITY			243	B RUBLES	MARKH02	067B	X.2
18	XG	GROSS NATIONAL PRODUCT, TOTAL			18	B. 1937R	M-P		
20	XGN	GROSS NATIONAL PRODUCT, NON AGRIC.			20	B. 1937R	M-P		
22	XGNN	GROSS NATIONAL PRODUCT, NON AGRIC., NON RESID.			22	B. 1937R	M-P		
45	XIC	INDEX OF INDUSTRIAL PRODUCTION, TOTAL CIVILIAN INDUSTRIAL PRODUCTION			45	1966=100.0	73JEC280		
43	XICD	INDEX OF INDUSTRIAL PRODUCTION, CONSUMER DURABLES			43	1966=100.0	73JEC280		
39A	XICH	INDEX OF INDUSTRIAL PRODUCTION, CHEMICALS			39A	1970=100.0	73OER		
292	XICMAC	INDUSTRIAL OUTPUT INDEX, CIVILIAN MACHINERY SAMPLE			292	1970=100.0	OER73		
290	XICM	INDUSTRIAL OUTPUT INDEX, CONSTRUCTION MATERIALS			290	1970=100.0	OER73		
44	XICND	INDEX OF INDUSTRIAL PRODUCTION, CONSUMER NONDURABLES			44	1966=100.0	73JEC280		
293	XICNDR	INDUSTRIAL OUTPUT INDEX, CONSUMER NON-DURABLES			293	1970=100.0	OER73		
392	XICP	INDEX OF INDUSTRIAL PRODUCTION, COAL PRODUCTS			392	1966=100.0	73JEC280		
297	XICTOT	INDUSTRIAL OUTPUT INDEX, CIVILIAN TOTAL			297	1970=100.0	OER73		
391	XIEP	INDEX OF INDUSTRIAL PRODUCTION, ELECTRIC POWER			391	1970=100.0	73OER		
289	XIFL	INDUSTRIAL OUTPUT INDEX, FUELS			289	1970=100.0	OER73		
394	XIFM	INDEX OF INDUSTRIAL PRODUCTION, FERROUS METALS			394	1970=100.0	73OER		

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SERIES	LABEL	DESCRIPTION	QTR	MON	ANN	UNITS	SOURCE	VAR#	EQUN
396	XIFP	INDEX OF INDUSTRIAL PRODUCTION, FOREST PRODUCTS			396	1970=100.0	73CER		
41	XIIM	INDEX OF INDUSTRIAL PRODUCTION, INDUSTRIAL MATERIALS			41	1960=100.0	73JEC280		
289	XIMAT	INDUSTRIAL OUTPUT INDEX, MATERIALS			289	1970=100.0	CER73		
291	XIMBMW	INDUSTRIAL OUTPUT INDEX, DISCOUNTED MACHINE-BUILDING AND METAL WORKING			291	1970=100.0	CER73		
395	XINF	INDEX OF INDUSTRIAL PRODUCTION, NONFERROUS METALS			395	1970=100.0	73CER		
397	XIPAP	INDEX OF INDUSTRIAL PRODUCTION, PAPER AND PAPERBOARD			397	1970=100.0	73CER		
42	XIPD	INDEX OF INDUSTRIAL PRODUCTION, PRODUCER DURABLES			42	1960=100.0	73JEC280		
295	XIPF	INDUSTRIAL OUTPUT INDEX, PROCESSED FOODS			295	1970=100.0	CER73		
393	XIPP	INDEX OF INDUSTRIAL PRODUCTION, PETROLEUM PRODUCTS			393	1960=100.0	73JEC280		
294	XISG	INDUSTRIAL OUTPUT INDEX, SOFT GOODS			294	1970=100.0	CER73		
296	XITOT	INDUSTRIAL OUTPUT INDEX, TOTAL			296	1970=100.	CER73	057A	X.1
93	XIW	INDUSTRIAL OUTPUT			93	1960=100.0	70WIZMN		
19	XN	NET NATIONAL PRODUCT, TOTAL			19	R. 1937R	B-P		
21	XNN	NET NATIONAL PRODUCT, NON AGRIC.			21	R. 1937R	B-P		
23	XNNN	NET NATIONAL PRODUCT, NON AGRIC., NON RESID.			23	R. 1937R	B-P		
244	XSRUB	COMMUNICATIONS OUTPUT			244	R R	NAR KHOZ		
504	XTRADE	INDEX OF RETAIL TRADE ACTIVITY			504	1960=100.	UEH		
301	XT7E	TRANS-CHAIN INDEX, 1970 WEIGHTS, EARLY SERIES FOR COMM			301	1970=100.0	1-G		
300	XT7R	TRANS-CHAIN INDEX, 1970 WEIGHTS, RUBLE SERIES FOR COMM			300	1970=100	D-G	072D	X.3
148	YCMEA9	NET MATERIAL PRODUCT IN CONSTANT PRICES, CMEA			148	1963=100.	44UNCTAD 20E		
149	YICMEA	INDUSTRIAL PRODUCTION, CMEA, TOTAL			149	1963=100.0	47UNCTAD		
150	YMCMEA	INDUSTRIAL PRODUCTION, CMEA, MANUFACTURING			150	1963=100.0	47UNCTAD		
605	ZD	REAL HOUSEHOLD DISPOSABLE INCOME			605	B RUBLES	TRAN	136I	Z.6
460	ZFPG8	PLANNED GROSS PROFITS,NATIONAL ECONOMY			460	B.RUBLES	PRAVDA		
181	ZM8	TOTAL MONEY INCOME (1973 FIGURES)			181	B RUBLES	73JEC393	039I	Z.4
195	ZM8'	TOTAL MONEY INCOME (1966 FIGURES)			195	B R	66JEC526		
579	ZMAK8	HOUSEHOLD AGRICULTURAL INCOME IN KIND			579	B RUBLES	KAHN/TRA	135D	Z.5
193	ZPD8	TOTAL DISPOSABLE INCOME (1973 FIGURES)			193	B R	73JEC393		
207	ZPD8'	TOTAL DISPOSABLE INCOME (1966 FIGURES)			207	B R	66JEC526		
461	ZPG8	ACTUAL GROSS PROFITS, NATIONAL ECONOMY			461	B RUBLES	NKHOZ	124D	Z.7
567	ZPCC8	GROSS PROFITS, CONSTRUCTION (CURRENT PRICES)			567	B RUBLES	NKHOZ		
565	ZPGI8	GROSS PROFITS, INDUSTRY (CURRENT PRICES)			565	B RUBLES	NKHOZ		
566	ZPCT8	GROSS PROFITS, TECO (CURRENT PRICES)			566	B RUBLES	NKHOZ		
200	ZPPC8'	PROFITS DISTRIBUTED TO COOPERATIVE MEMBERS (1966 FIGURES)			200	B R	66JEC526		
186	ZPPC89	PROFITS DISTRIBUTED TO COOPERATIVE MEMBERS (1973 FIGURES)			186	B R	73JEC393	105E	
197	ZPWC8'	GROSS EARNINGS, COOPERATIVE ARTISANS (1966 FIGURES)			197	B R	66JEC526		
183	ZPWC89	GROSS EARNINGS COOPERATIVE ARTISANS (1973 FIGURES)			183	B R	73JEC393	103E	
184	ZPWF8	COLLECTIVE FARM WAGE PAYMENTS (1973 FIGURES)			184	B R	73JEC393		
198	ZPWF8'	COLLECTIVE FARM WAGE PAYMENTS (1966 FIGURES)			198	B R	66JEC526		
201	[illegible]	MILITARY PAY AND ALLOWANCES (1966 FIGURES)			201	B R	66JEC526		
187	ZPWM89	MILITARY PAY AND ALLOWANCES (1973 FIGURES)			187	B R	73JEC393	106E	
185	ZPWS8	NET HOUSEHOLD INCOME FROM SALE OF FARM PRODUCTS (1973 FIGURE)			185	B RUBLES	73JEC393	035D	Z.3
199	ZPWS8'	NET HOUSEHOLD INCOMES FROM SALE OF FARM PRODUCTS (1966 FIGURES)			199	B R	66JEC526		
518	ZPWSC8	WAGE PAYMENTS AGRICULTURE, STATE AND COLLECTIVE FARMS			518	B RUBLES	TRAN	034I	Z.2
182	ZPWU8	GROSS EARNINGS, WAGE AND SALARY WORKERS (1973 FIGURES)			182	B R	73JEC393		
196	ZPWU8'	GROSS EARNINGS, WAGE AND SALARY WORKERS (1966 FIGURES)			196	B R	66JEC526		
465	ZWU8	GROSS EARNINGS URBAN WORKERS			465	B RUBLES	TRAN	050B	Z.1

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APPENDIX C

WHARTON ECONOMETRIC FORECASTING ASSOCIATES INC. WHARTON EFA

SRI-WEFA ECONOMETRIC MODEL: LIST OF WORKING PAPERS

0. Green, Donald W. and Higgins, Christopher I., "A Preliminary Specification of an Econometric Model for the Soviet Union," (Oct. 1973).

1. Green, D.W., and Higgins, C.I., "The Use of Annual Plan Targets in an Econometric Model of the Soviet Economy: The Concept of an Implicit Plan," Appendices: List of Equations, List of Variables, Selected Bibliographies (Dec. 1973).

2. Green, D.W., "Data and Accounting Issues Arising in the Construction of an Econometric Model of the Soviet Union," (Dec. 1973; Revised, Jan. 1974).

3. Marrese, Michael, "A Preliminary Specification of a Soviet Agricultural Model," (Dec. 1973).

4. Green, D.W., and Higgins, C.I., "Some Considerations in the Specification of a Plan-Behavioral Model of the Soviet Union," (Feb. 1974).

5. Higgins, C.I., "The Effects of Habit Persistence and Supply Constraints on Soviet Consumption: Some Preliminary Notes," (Feb. 1974).

6. Saito, Mitsuo, "The Estimation of Soviet Production Functions," (March 1974).

7. Higgins, C.I., "Notes on Trade Equations for the Soviet Model," (April 1974).

8. Green, D.W., "An Addendum to the Plan-Behavioral Model of the Soviet Union," (April 1974).

9. Green, D.W., "The Soviet Construction Sector: Production Functions and Capital Formation," (April 1974).

10. Green, D.W., "Capital Formation in Soviet Industry," (April 1974).

11. Higgins, C.I., "Urban Labor Force, Non-Agricultural Wage Bill and Agricultural Employment," (April 1974).

12. Marrese, M., "The Soviet Agricultural Sector: An Initial Glance," (May 1974).

13. Green, D.W., "Capital Formation in Soviet Transport and Communications," (May 1974).

14. Green, D.W., "Soviet Transport and Communications, 1955-1972: Production Function Estimations," (May 1974).

15. Green, D.W., "The Soviet Services Sector: Capital Formation and Production," (May 1974).

16. Green, D.W., "Production Function Estimations for Soviet Industry," (May 1974).

17. Green, D.W., "Nonagricultural Employment: Total and Sectoral Composition," (June 1974).

18. Green, D.W., "Capital Formation and Employment in the Non-agricultural Sectors of the USSR: The Implications for Production Function Estimates," (June 1974).

19. Higgins, C.I., "Average Wages: Can They be Endogenous?" (June 1974).

20. Higgins, C.I., "Choice of Market Determined Price for Agricultural Products," (June 1974).

21. Marrese, M., "An Econometric Model of the Soviet Agricultural Sector," (July 1974).

22. Green, D.W., "Investment Determination in the Soviet Economy," (July 1974).

23. Higgins, C.I., "A New Consumption Price Index, Retail and Wholesale Price Determination," (August 1974).

24. Higgins, C.I., "Data and Relationships for Soviet Inventories," (August 1974).

25. Green, D.W., "The State Budget of the USSR: An Econometric Analysis," (September 1974).

26. Green, D.W., "The Agricultural Sector of the SRI-WEFA Model of the USSR," (September 1974).